LECTURES
ON
DISEASES OF CHILDREN

ROBT. J. LEE

BAILLIÈRE, TINDALL & COX.

LECTURES

DELIVERED AT THE

HOSPITAL FOR SICK CHILDREN,

GREAT ORMOND STREET.

BY

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PREFACE

TO THE SECOND EDITION.

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In this Edition I have introduced Lectures on subjects rather of special than general interest; that is to say, not to the same extent directly clinical, and assisted by examples, like those in the First Edition.

Although feeling certain of the value of Clinical Teaching in its proper sense, I had doubts whether such Lectures when published would find acceptance. These doubts have been removed, and I entertain the hope of making further additions in the course of time.

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PREFACE

TO THE FIRST EDITION.

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ONE of the three objects for which the HOSPITAL FOR SICK CHILDREN, in Great Ormond Street, was founded, was the improvement of our knowledge of the Diseases of Children. This has always been urged as entitling the Hospital to the favour and support of the Medical Profession. While this claim exists the members of the Medical Staff cannot well avoid the responsibility attaching to it, and must endeavour to justify the claim to the best of their ability.

I have always regarded Clinical Teaching as of the greatest importance and value to students. Whether the publication of Clinical Lectures is likely to prove of any value is another question, and I should have hesitated to publish this very simple contribution towards the claim above referred to, if I had not been requested to do so by some of those who attended these Lectures.

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CONTENTS.

LECTURE I.

Introductory.

The question is often asked "What is the best book on Diseases of Children?" It is not an easy question to answer. A good book is a great help if, along with reading, it is possible to see examples of the maladies described. Without assistance in clinical study, even with a good supply of examples, it is a long time before the difficulties of diagnosis are overcome, and some grasp is obtained by the mind and the senses of the differences between the exact description of the text-book and the varying features of disease.

The study of Medicine is like the study of a language. A text-book may be a dictionary, or it may be a grammar. Our text-books try to combine the two, with more or less success, according to the amount of knowledge possessed by the student himself. A full and complete work is what the advanced student desires; a simple, clear, well arranged and convenient book is what is generally wanted by those who ask the question, "What is the best book on the subject?" We are all students, students of the language of nature, some more proficient than others, but all anxious to know and understand more and more of the infinite variety and subtlety of this language.

That book is the best which describes most truthfully and intelligibly the characters of disease. If we read a ...tion and easily recognise the specimen, or if we see

the specimen and find it well described in the text-book we are satisfied. The book may be good so far as the description of symptoms and diagnosis are concerned. Something more is required however to make a work practically useful, namely, proper directions for the treatment of different diseases.

We must be content if we find in a text-book not a variety of methods, but some few clear instructions founded on experience, and which, in a majority of cases may be applied with average success.

In this room there is, as you see, a large collection of books, a library of works on diseases of children. It will give you some idea of the literary labour, which Dr. West must have bestowed upon his well-known lectures. It will also show you what an amount of work has been done by others who have studied, and written upon this subject. You see, therefore, how difficult it is to answer the question, What is the best book to read? In our own language the works of Dr. West, Dr. Meigs, and Dr. Smith are comprehensive and almost sufficient for all the requirements of ordinary practice.

The recently published work, by Dr. Henoch, if you read German, will certainly be found superior as a text-book to those I have mentioned; while in Dr. Gerhardt's handbook we have the most complete and valuable work yet published, though rather a work of reference, and useful to the advanced student, than a book to be read by those beginning to study the subject.

I think that in method and style the French authors surpass both the Germans and the English, and if I had to select one book in preference to others for the use of a student I should take the volume on the Diseases of Children of the Bibliotheque du Medecin Practicien, an old work, but most excellent.

I may assume that most of you have passed beyond the

stage of text-book reading, a period the termination of which is anxiously regarded in the form of an examination. If there are any who have not passed that period, I would say to them, be content with the general works on medicine, and the knowledge contained in them, for all the best works treat largely of the diseases of children. It will be better I think to defer any particular mention of special treatises on some important diseases, and to direct your attention to them when treating of the subjects to which they refer.

One of the works on general medicine which contains information of great value is the Lectures of the celebrated Dr. Trousseau, which have been so well translated into English. His great experience as physician to a children's hospital qualified him to speak with authority, equally when expressing general views, as when laying down rules of treatment.

Now it is not my intention to do more in these lectures than to show how the diseases of children may best be studied by those who are preparing very shortly for practice, if not already engaged in it. That is to say, we shall study together the phenomena of disease by clinical observation of cases selected from the out-patient department, and at the same time that the special features of a case are examined and noted, the typical character of the disease which it illustrates will be remarked upon.

At this hospital, for good reasons, children under two years of age are not generally admitted, so that the diseases of infancy proper must be studied in the out-patient departments; therefore, in directing most attention to the maladies of infancy, I shall be able to supplement to some extent the teaching of my colleagues who have the care of the in-patients.

There is great advantage in this method of clinical study. It is that while learning a good deal of the disease, we learn something more than text-b e particular point of

interest which will be impressed upon the memory, and which will not only be valuable for future purposes of diagnosis, but suggest some ideas which will exercise original thought and observation.

So far as the subject of treatment is concerned—and perhaps some will attach more importance to this than to anything else—I shall limit my remarks almost entirely to personal experience. To arrive at definite plans of treatment is naturally the chief object we all have in view, but since the results of experience seem to differ so greatly as they do in respect to treatment, the limitation I propose appears to me necessary.

There is a right and wrong method of treatment for every case, and most certainly if treatment is not founded upon experience, either personal or otherwise, we are extremely likely to do positive harm instead of good.

There are some diseases which must be studied in groups or in large numbers; others which from their rarity must be studied from individual cases. The table of out-patients printed at the end of the annual report of this hospital shows this clearly. In the year 1882 between twelve and thirteen thousand cases were treated as out-patients, and these are classified under sixty different heads. But half of these twelve thousand cases are included under five heads, each numbering more than a thousand cases. Between twelve and thirteen hundred (1,258) were entered as debility and atrophy; between eleven and twelve hundred (1,187) as diseases of the skin; nearly the same number (1,184) as inflammation of the lungs; about the same (1,174) as whooping-cough; and between one thousand and eleven hundred (1,059) as rickets. Thus you can form a good idea of what are the most common diseases of young children. Next in order come diseases of the stomach, intestines, and peritoneum; then diseases of bones, and next the cases of s
of malformation, and of abscesses. The three last a

merically not very different—that is to say, they varied between 217 and 275.

Out of a total of 10,000 cases in hospital practice, you will find that about 8,000 are included under the ten heads just mentioned, and the rest are divided among the fifty different heads to which I have alluded. Any further analysis, however, would occupy time to but little purpose.

Now, there is a remark which I think as well to make at once regarding the general character of children's diseases. It is that there is a want of definiteness about so many cases that a feeling of disappointment seems to oppress the mind at times, and induce a sentiment of doubt whether any real progress can be made and certainty arrived at in diagnosis. In our annual report there are more than 1,500 cases in about 12,000 entered as not classified by my colleagues and myself, or about one in eight cases to which we cannot give a name, and where the diagnosis is more than difficult.

A case may be clearly a serious one, and we may listen to the accounts given by the parent or nurse, and make the most exhaustive examination, and yet be uncertain what is the cause of the symptoms, what organ is affected,—in short, what is the matter with the infant.

This dissatisfaction will not be felt so keenly if we reflect upon the nature of children's diseases, and try a somewhat different mode of study from that adopted for adults. We must fully realise the fact that we do not know what is the true pathology of many diseases in early life, and that even post-mortem examination does not at present explain many symptoms. Take the question of the cause of rickets, and see how different are the opinions as to its true pathology; or, take the "wasting diseases" which Dr. Eustace Smith has grouped under this convenient term, and follow them to their origin if possible. Let us recognise this difference

of disease in adults and children, and be

l see whether by other methods we may

not arrive at results accurate enough for the practical purposes of prognosis and treatment.

Do not suppose that physical diagnosis should be neglected in the case of children, but what I want you clearly to understand is this, that with all the care and exactness possible, and with the skilled aid of instruments, we are far more often at a loss to explain symptoms than is the case in adults. For this reason, therefore, we are obliged to study symptoms very closely, and with this advantage, that our senses are quickened and our diagnosis of disease in adults is thereby improved.

Not long since I was discussing with a friend whose knowledge of children's diseases is recognised by all, the different mental phases through which we pass when making a special study of the subject. We agreed that, at first, knowledge seemed to come fast, and difficulties were easily surmounted; then progress was arrested, as it were, suddenly and rather violently by one or more cases of unusual difficulty, where our diagnosis was worse than uncertain; where, in fact, it was utterly wrong—or, at least, if the diagnosis was not wrong, the opinion expressed of the course of the disease was as far from the result as it could be. As time goes on, we agreed that this feeling of disappointment subsides as we learn to appreciate the value of symptoms which we had previously hardly noticed, and certainly had not interpreted properly, and the subject grows in interest, and every case, however simple, affords something new for observation and reflection.

Here, for example, is a child, a little girl, twelve months old. There is apparently nothing particular the matter with her. She sits quietly all day; eats, drinks, and sleeps; and there is only one thing the mother complains of—that she cries when she is moved. If she is left alone she is happy in her way, and amuses herself; but as soon as she is moved she cries. My assistant says he can find no cause.

The case is a simple one. Its details are familiar enough. Now how are we to connect this condition with that common disease, rickets, unless through the experience gained by clinical observation. We know that the evolution of the characteristic signs and symptoms in such a case is merely a matter of time unless by treatment the progress of the malady is arrested; but the changes in the bones and the epiphysial cartilages are not yet perceptible, and we have really nothing to guide the diagnosis but a symptom or two. Such a trifling one apparently as the child putting its hand frequently to its head. You would probably not attach much importance to such a slight symptom, and that is why I chose the case to illustrate the necessity of attention to symptoms.

You will see a large number of cases of rickets where there are no signs, except the bending of the bones, that is, no particular derangement of the health. In others again, the question will arise whether there is any connection between laryngismus or convulsions and this disease, and though at first you may be doubtful on this point yet observation will gradually teach you that they are very intimately related.

Thus we work on, accumulating facts, until they bear arranging, and teach us principles; and then there is a special interest in studying the more delicate features of disease, and in regulating treatment with a refinement only to be acquired by practice.

In the next lecture I propose to consider more fully the subject of rickets.

LECTURE II.

Rickets.

To-day we will consider the subject of rickets, taking some further details in the condition and history of the child you saw at the last lecture. The chief symptom stated by the mother is pain when it is touched or moved. The way in which the child sits, shows that the spine is weak and slightly curved. The head is sunk between the shoulders. She turns it slowly and with some little difficulty from side to side. The head is rather square and is depressed in the central line where the parietal bones meet. Her expression is grave and sad. Her skin is pale and flabby. There is nothing particular to notice in the arms, except that they are small and wasted, and the skin loosely slides over the deeper tissues. The legs, like the arms, are wasted, and as she sits are bent so that the heels approach the buttocks, and the outer side of each knee touches the table. In this position she remains quietly for hours if undisturbed. If she is undressed you will see that the chest is small, the capacity of the thorax less than natural from the way in which the ribs are brought close to one another, partly by the curve of the spine, and partly as if they had been pushed up by the round projecting abdomen. These are the broad, and if I may use the term, mechanical features of the case; and they are really the features most worth attention for reasons I will give you. So far as the peculiar signs of rickets are concerned they are not prominently present in this child.

Generally, we examine the ends of the bones for evidence of the rachitic process; the lower ends of the radii, the femora, and the tibiæ, and the sternal ends of the ribs. In this child there is a slight enlargement of the costal cartilages, but the arms and legs show the condition of terminal enlargement so little as hardly to allow us to say they are affected. It is not to illustrate the deformities of rickets, however, that this case is here. When the deformities are well marked it does not require a professional eye to recognise them. It seems from historical accounts that the disease was named by the people, but not the disease as we see it in this child. It is here presented in an early stage, before deformities of bones have had time to arise, and when to a great extent it is in our power to arrest them. You would be quite certain to be asked in such a case as this, What is the matter with the child? and if you were to answer without some explanation, the child has the rickets, the mother would not believe you. More than that, if she were in a class of life where she could afford to indulge in maternal vanity, she would not only disbelieve you, but she would be offended. If we want to answer the question what is the cause of such a condition we must inquire into the history; and not rest satisfied with the account of the mother that the child has had nothing much the matter with it. It was strong till it was nine months old, and was weaned three months before; thus there was no important change in its food to account for its present state. Some teeth have come through, three lower incisors and two upper, so that dentition is backward. It has not had any diarrhœa, or acute digestive derangement. It has had a cough, but that the mother says is better. Now experience has taught me that if there is one cause of rickets more common than another it is some form of pulmonary or bronchial inflammation, and it is singular how much this is overlooked. On questioning the mother about this cough she says it began in

the late winter when it was severe, but that it is much better now. I have examined the chest and find coarse râles almost universal. The child had probably an attack of capillary bronchitis, and the tissue of the lung has not recovered its normal condition. It is enough for our purpose to recognise the fact that for some time past the respiratory processes have been much interfered with, and nutrition has consequently suffered. It was only after observing many hundred cases of rachitis that I formed the opinion that the most common cause of rickets is bronchitis, or some form of pulmonary inflammation. After whooping-cough and measles, even in children above the age of infancy, rachitis is frequently met with. It may not be the same form of rachitis as in this child, but it is of the same nature. Let me explain this. A child, three years of age, strong and well, whose limbs and spine are perfectly formed, may have an attack of broncho-pneumonia concurrently with whooping-cough or measles, from which recovery is satisfactory, though the cough remains. In the course of a few weeks when the child is up and about the legs begin to bend, and rickets are easily diagnosed. But there is a slight difference between such a case and that of this infant. In the one the cartilaginous ends of the bones are the points to which we look for the evidences of the disease, in the elder child the tissue of bones previously healthy is affected, and weight or pressure produces curvature. Before we dismiss this infant what treatment shall we prescribe? There are two chief points to which we must attend. The one is the relief of the bronchitis, the other the simple mechanical treatment of the too yielding osseous frame-work of the body. For the former there is nothing better than codliver oil and some preparation of iron; the syrup of the phosphate or the iodide. There is no question whatever of the value of external applications to the thorax; the liniment of iodine, turpentine, or camphor, and with these, of protective covering for the chest and back

by day and night. If there is anything to add to this it would be warm, dry, bracing air, but particularly warm and dry air. In the mechanical treatment the first point to attend to is to make this infant lie down as much as possible. If she sits up the weight of the head necessarily causes the spine to curve, and the thorax is compressed. Although the bones are soft, they will not bend from the effects of muscular action. When the forearms of an infant are much curved you may be certain this has come from crawling. In three months time the infant will be in a very different state of health if our directions are followed, and will outgrow all present signs and symptoms of the malady.

In taking notes of a case of rickets I would advise you to follow this plan: Register the age of the child, its sex, whether suckled or fed; how long suckled and when weaned; what the diet has been; the number of other children, if any; how many have been rickety; the state of the parents' health; and then short notes of the case.

I need hardly say that a great deal has been written upon the subject of rickets. The literature is most interesting, for it begins with an account of the disease which is a masterpiece of its kind, the work of Dr. Glisson, Professor of Anatomy at Cambridge, one of the most esteemed and celebrated anatomists and physicians of his time. Between then and now the world is older by two centuries. They were troubled times for England, for the country was the scene of civil wars, and the life of Charles was approaching its unhappy end. In 1650 Glisson's second edition on Rickets was published, about twenty years after Harvey's work on the Circulation of the Blood. I say if you take an [illegible] in such matters you will refer to Glisson's work, and [illegible]tween that time and the present the most instructive [illegible]e obtained by reference to the Practice of Physic [illegible]h brings us to the end of last century; [illegible]epf Merei, published in 1855, which

comes second in importance to Dr. Glisson's treatise; then the well-known lectures of Sir William Jenner, delivered in this hospital, and published in the *Medical Times and Gazette*, 1860, then a short summary of the results of extensive observation of cases by Dr. Gee, in St. Bartholomew's Hospital Reports (1868); and lastly, a treatise by Dr. Baginsky published last year. I must not omit to mention the lecture by Dr. Trousseau, which is often referred to, and from a practical point of view is deserving of being read with great attention. But even after studying with care and thought the various symptoms of the disease, and after considering them severally and in combination, as well as in their mutual relations, and after having learnt all that is possible from the observation and experience of others, you will still find it difficult to answer the question, What are rickets?

We may assume that the child at the age when rickets generally appears is in a peculiar condition, such as it is never in at any other time of its life; that certain processes of growth and development are taking place of which the formation of bone is one of the most important. This being granted, and I need hardly say that there is some reason in such an assumption, the next step is simple enough. Rickets may arise from any cause which disturbs or arrests this process. Now I wish to point out very clearly indeed that this is an old idea. Let me read to you what Cullen taught a century ago. After his excellent description of the disease, he observes:—

"There is, however, something still wanting to explain why these circumstances discover themselves at a particular time of life, and hardly ever either before or after a certain period, and as to this I would offer the following conjectures: — Nature having intended that human life should proceed in a certain manner, and that certain functions should be exercised at a certain

period of life only, so it has generally provided that at that period, and not sooner, the body should be fitted for the exercise of the functions suited to it."

Most of the questions in connection with rickets which have engaged, and are still engaging, the attention of the physician and the pathologist were considered by Cullen. Its relation to syphilis, to tubercular or scrofulous tendencies in the parents are particularly mentioned by him, and disposed of in a very decided manner. He notices also the chemical theory and argues forcibly against it. Dr. Merei took a wide view of the subject and showed to what extent conditions of locality, of atmosphere, and temperature, had any part in its production. There seems to be no point which has not been examined long since, and as far as possible decided. More than enough has been done to prevent erroneous and theoretical views, and we may save ourselves the trouble of going over well worked ground again. When we come to the subject of syphilis I shall have occasion to make some remarks upon its relation to rickets, and I shall give you evidence to prove that Cullen's conclusion was right. He says: "It has been frequently supposed that a syphilitic taint has a share in producing rickets, but such a supposition is altogether improbable." And then he gives the reasons which are most valid and conclusive.

Instead of trying to discover what is the cause of rickets in the hope of finding one in particular, let us recognise clearly the fact that the causes are manifold, and that each case has one or more to which the disease is due. There is a tendency to assume that because we cannot find one cause it is useless to do more in any case than order cod-liver oil [illegible] some preparati[illegible] iron. Every case of rickets requires [illegible] treatment [illegible] as any other morbid condition, [illegible], warmth, and good food are of [illegible] let me say a word or two

regarding the child whose case we have considered. It is clear that the chief trouble from which it suffers is the want of rigidity in the spinal column, and the consequent compression of the thorax. Consider how this can best be remedied. The weight of the head must be lifted from the spine, and we have to devise some plan to prevent the child from sitting up, as it does, all day in one position. The child prefers sitting up to lying flat, and to gratify its wishes in this respect some support must be provided for the back. Therefore, give support by an inclined rest to the spine, and arrange a pillow so that the weight of the head is to a great degree transferred to it. If the body be supported at an angle of from 40 to 60 degs., or even more, the mechanical gain is great, and the capacity of the thorax much increased by the costal intervals being thus extended. The bending of the back in young children is so often brought under notice, and so great a cause of anxiety to parents that I think the mechanical treatment of it is well worth attention.

LECTURE III.

Diseases of the Skin.—Dermatitis.

Before we examine some examples of the most common types of cutaneous disease in young children, let me make a few remarks upon this subject, which I think will be of practical use.

Diseases of the skin are very frequent in early life. In the annual report of this hospital, to which I have already referred, 1,187 cases in a total of 11,745 presented some form of cutaneous affection; that is about 10 per cent. They come second in numerical order, if cases of "debility and atrophy," which slightly exceed them, can be regarded as a special class. They exceed the cases of whooping-cough, of rickets, and of inflammation of the lungs, and, therefore, we may safely regard them as the most common disorders of infancy and childhood.

Dr. West purposely omitted to treat of this class, as he considered that they belong to the province of the dermatologist; and the same view was expressed in another well-known work, namely, Dr. Vogel's, where he stated that the diseases of the skin in children are the same, in all important respects, as in adults.

Now, the first remark which must be made on this point is contradictory to such opinion. The diseases of the skin in children are very different indeed from those in adults. It is true they may resemble the latter in certain anatomical characters, but, clinically, they differ to such a degree as to

make it absolutely necessary for us to study them almost as a special subject.

Some diseases of the skin are nearly the same in early as in adult life. For instance, herpes only differs to this extent, that in children the eruption is not usually limited to the intercostal nerves, but is frequent in the supra-scapular, humoral, anterior femoral, and other parts. In an analysis that I made a few years ago of a large number of cases of all forms of cutaneous disease in children, I found that about 67 per cent. were of a kind peculiar to infants and young children, and the others only differed, if at all, somewhat as herpes does. But these latter occurred in children above the age of infancy, and generally after the age of four or five years. Among them were the various forms of scrofulous disease of the skin, the true scaly eruptions, lepra, and psoriasis, the parasitic diseases, the syphilitic, and some others, upon which I may have occasion to make a few remarks.

Let us confine ourselves to those which are peculiar to infancy and childhood. Their general characters are described by Trousseau in Lecture xiv., vol. ii. (New Sydenham Society) under the term Sudoral Exanthemata, a lecture full of interest and valuable suggestions. I would not venture to call in question the propriety of the term Sudoral Exanthemata if it were not that it rests upon a theory, the correctness of which is, to say the least, more than doubtful. There is no evidence to prove that the perspirations, common in infancy, are the cause of these eruptions, or that "the greater frequency of these affections in very young children arises from the manner in which they are clad." It is more probable that the perspiration as well as the eruptions are due to one and the same cause, and that they are concurrent with, but not dependent on, one another.

It appears to me that the term dermatitis may be fairly used to include all the various morbid conditions of the skin,

which Trousseau designates as sudoral exanthemata; and if it is objected that such a term is too general for accurate definition, it must be clearly recognised that the very fact of the multiplicity of forms assumed by these eruptions, makes it impossible to find any one term to include them all. This fact was fully recognised by Trousseau. "The number and variety," he says, "of sudoral eruptions associated together in the same individual, and their transmutations, even when produced by the same cause, is an important fact. My friend Dr. Duclos, of Tours, in his excellent work on Sudoral Eruptions, shows most conclusively, though in opposition to the views of many dermatologists, that it is impossible to establish distinction of species upon anatomical characters alone, as these characters differ according to the epoch at which they are studied, merge into one another, and do not retain specific characteristics throughout their duration."

It is unnecessary to advance any further argument in favour of the term Dermatitis, for it is gradually being admitted by the best authorities, not only as a convenient term, but as a proper and scientific one.

The common diseases of the skin in infancy are truly due to inflammation. Sometimes the inflammation is slight and limited, producing only superficial changes; sometimes deeper tissues are affected, and surface discharges of serum or pus occur. Sometimes the inflammatory process arises in numerous small centres, as in the very common affection popularly known as red-gum. Do not suppose that I would have you attach no importance to differences of anatomical character. I simply argue in favour of broad general views when treating skin diseases in infancy, and of relying much less upon anatomical character than is proper and necessary in the case of adults; and this for the reason that we find in the same child, one and the same c of producing various forms of eruption. For of treatment, i re important to dete e

accurately than to decide upon the special name which ought to be given to the different cutaneous changes presented to the view.

Let us proceed at once to the clinical study of this subject. Our first case is a boy, aged one year and four months. His legs are spotted with small ulcers, which we should agree in calling ecthymatous. There are some also on the left arm, but the rest of the body is almost entirely free from them. The backs of the legs, thighs, and nates are affected nearly equally on both side, and you can count about thirty separate centres of inflammation on each of them. This is a very common eruption, and in a case like this we can follow the changes through their various stages. The earliest stage which we can detect on close examination, is a minute red spot, slightly elevated above the surface, and which can just be felt as the finger is passed over it. In another spot we see a more advanced stage of the process. It is more raised, it is of yellow colour on the summit, and contains a minute quantity of pus. There is a wide area of redness around the base of this small pustule, which fades gradually into the surrounding surface. The ulcerated spots which we noticed at first are in a stage much later. The surface has broken and covered itself with a crust of brown, varying in shades in different ulcers; the later the stage the darker the colour. The area of redness around some of the oldest ulcers is fading away already. Now, what is the history of this eruption? The mother states that these spots on the arms appeared only four days ago, the day after those on the legs; so that the life history of one of these centres of inflammation lasts but a few days. There are some of them which seem to have been arrested in their progress, and after nearly reaching the second stage the inflammation has subsided without rupture of the skin.

The history of the case is worth attention. The child has been under treatment for six weeks. It was brought at first

for what the mother called "nettle rash," but was entered in the note-book as a case of strophulus (red gum).

It was well enough a fortnight ago for the mother to cease bringing it, and the present state has arisen since a week. The mother tells us the child had red gum when ten months old, but when she brought it the nettle rash was the chief trouble. I shall have occasion to make some remarks upon this form of urticaria. At present it is sufficient for us to recognise the fact that the child has been the subject of various forms of cutaneous disturbance, beginning with a papular eruption, which was associated with urticaria, and later assumed the form of ecthyma. The child was vaccinated at the age of ten weeks, and nothing followed to lead to the idea that vaccination was the primary cause of the cutaneous trouble. These ulcers are irritable, especially when he goes to bed. There has been no fever to speak of, and none of the symptoms of chicken-pox. In some cases there is a good deal of fever, and that is a point to which I shall direct your attention presently.

The child's bowels are regular, he has four upper and three lower incisors ($\frac{4}{3}$); he is fed on bread and condensed milk, and beef tea; and runs about well. He has no sign of rickets, and is a well-grown child.

As far as treatment is concerned, it seems that good results were obtained very soon after he was brought here, and at the end of four weeks the cutaneous troubles subsided. On ceasing to take the medicines prescribed they returned in a different form. The treatment which I think will be found most successful in such cases as this is the administration of small doses of grey powder, or grey and Dover's powder, at bed time every other night; a combination of one of the salts of iron with sulphate of magnesia, repeated two or three times daily; and a hot bath at least once in the twenty-four hours. The skin should be dusted thickly with starch while still wet after the bath. If the surface is ulcerated, it

is better to use a mixture, in equal parts, of precipitated sulphur and starch for dusting the skin. This is the routine treatment, if I may use the expression, which has been ordered in several hundred cases with satisfactory results. On this question of treatment, however, I shall enter into some details later.

Let us take the next case, a child of five months old, brought here for the first time this morning; a healthy-looking, well-nourished boy. The mother is suckling him, and there is no reason to think he is insufficiently nourished.

He was vaccinated three months ago, that is when two months old, on the right arm. The arm healed well. At the time of vaccination there was a little scurf on the head, which began soon after to increase, and now there is general superficial inflammation of the whole scalp, the forehead, and the sides of the face.

There is a good deal of discharge of clear fluid, but the surface is not universally moist. If you look closely you will see that there are tracks where the surface is rather red, and is exuding fluid; but between these the skin is dry, smooth, and pale in colour. The fine rough scurf or scales, which are scattered chiefly over the back of the head, are formed from dried exudation and not from exfoliation of the cuticle.

The arms and legs are quite free from this affection, and the body also, except just on the back where the skin is very slightly scurfy, and on the right arm where, as you see, there is a very actively inflamed surface, from one and a half to two inches in diameter. It is an oval surface, red, very moist, and in some points bleeding, and we can just perceive the old marks of vaccination. This is a point of great interest, and worthy of consideration. This condition of the arm did not follow immediately on vaccination, for the arm healed and a month elasped before redness around the

vaccine spots appeared. The head and the arm became inflamed at the same time.

This is a typical case of superficial dermatitis of the head and face, or, if you prefer to call it so, of eczema capitis.

Here are two other children who have been suffering in almost exactly the same way, whose histories I will briefly give you, after which we will review the symptoms and discuss the pathology of dermatitis.

The first child is thirteen months old. Since the age of two months the head and face have been inflamed. The scalp has been red, moist, and irritable. The least pressure caused abundant exudation of fluid. The forehead and cheeks were rather less inflamed. The case presented the most severe form of the malady, and, to use the mother's own expression, "the child was truly a sight to see." Vaccination was deferred till it was four months old, and when performed nothing happened in consequence. The arm took well and healed. The head remained in the same condition.

This was the condition which he presented when brought here five weeks ago. The head is now dry; the eruption has almost disappeared from the forehead. The irritation has greatly diminished, and the child is making a fair recovery. On the front of the left leg there are about a dozen minute papules, and on the right there have been a few similar, which the child has scratched and caused to bleed. These have appeared within the last week.

There is one fact in the family history to be noticed, namely, that two other children have had "sore heads." The only symptom of ill-health in this child was constipation, at least no other cause could be given for the condition of the head.

The treatment was almost the same as in the last case. Hot bathing for the head, then covering it with sulphur and olive oil; and the following medicine:—Mis. ferri lax., ℥ij.;

Liq. arsencici, ℥ij. To be given three times a day. (Vide Hosp. Pharmacop.)

The fourth and fifth instances of dermatitis which we will take this morning are like the last but one. These two children, the one two years and two months old, the other four months old, were brought here seven weeks ago. They were both in precisely the same condition as the second child we have seen.

The elder was vaccinated at the age of one month, and the head began immediately to inflame; and since then, that is for two years, the condition had remained the same up to the time the child came here. The younger child has not been vaccinated. There are four other children in the family, none of whom have suffered, but there is a hereditary tendency on the side of the mother, who tells us that ever since childhood she has been subject to "scurf" every spring. This fact must be taken into account, for the reason that occasionally we meet with very obstinate cases of dermatitis in children without satisfactory reasons for the chronicity of the affection, and it is only on inquiring into the family history that a probable explanation is afforded of the difficulty of obtaining the usual satisfactory results from treatment. The elder child is now pretty well. In the younger child the eruption is rapidly subsiding. It began to disappear on the back, where it was far less severe than on the head, and now only the summit and posterior parts of the head are affected. The face and forehead, like the back, are free from all signs of it.

The treatment has been the same as in the last case; hot baths, the application of sulphur and olive oil, occasional small doses of grey powder, and the internal administration of mist. ferri laxant., and liq. arsenicalis.

The common cause of dermatitis is some derangement of the digestion, due to improper diet, and though no particular allusion has been made to that point in treating these cases,

the reason is that we have, as you probably know, a set of printed rules for feeding, a copy of which was given to the mothers with orders to attend to them strictly.

I need hardly say that no soap of any kind is permitted, and great importance is attached to the use of the warm bath. The water must be as warm as the child can bear it, and the bathing must be continued for half an hour or more, and if this can be done night and morning the cure is accelerated.

Now do not despise minute details in the treatment of this class of cases, for success in treatment depends upon attention to details. I am surprised sometimes at the trouble and expense to which parents are put in consequence of the members of our profession, who are in fault in not considering these cases worthy of their attention. Let me quote a sentence from Trousseau's lecture—"Although the study of these affections is apparently of small importance, it really possesses a much higher practical interest than is generally supposed," and again, at the close of this same lecture—"I cannot sufficiently impress on you the magnitude of the services you may be able to render to your patients if you thoroughly realise the importance and frequency of sudoral exanthemata; and if, with a view to cure them, you have the courage to fight against the deplorable prejudices propagated by physicians of a former century, and which it is your duty to endeavour to eradicate."

This last sentence was not intended to apply so much to children as to adults, but I could easily prove to you that it does apply quite as truly. The only way, however, to remedy the defects of our profession is to study to gain deeper and more accurate knowledge. Ignorance is the cause of our deficiencies.

Now, where shall we begin to study this question of dermatitis? If I were to put the question: "Do you think that vaccination is a common cause of dermatitis?" you

would answer probably, "there is a general idea that vaccination does cause it, but this is a popular fallacy." Tell me, then, what is the cause of this condition in the child which we have been studying this morning? Are you quite sure that vaccination has nothing to do with it? Do you think it possible that if this condition follows a discharge from the ear, or the wound caused in the cure of a nævus, or after an attack of chicken-pox when some of the pustules have inflamed; it might also follow vaccination?

Here is a subject worth study, It is because Trousseau saw it in this light that I said his lecture was valuable and suggestive. "There are some people whose blood—to use the common expression—is poisonous (venimeux). Under the dominion of a true suppurative diathesis, the smallest wound, the slightest excoriation, becomes the starting point of interminable suppuration in some people; an ophthalmia or coryza, resisting every kind of treatment. In patients of this diathesis—chiefly children, you will often see eruptions, generally vesicular, and pustular, supervene, even after perspirations which are not very profuse." I have warned you against the sudoral theory, but putting that aside, you see how deserving of serious consideration this subject appeared to Trousseau. On some further occasion we will return to it.

LECTURE IV.

WHOOPING-COUGH.

LET me direct your attention to this infant, aged only seven weeks, and suffering from whooping-cough. It is the first child. There were no other children in the house from whom the disease could have been contracted. It seems that four days after her confinement the mother was visited by a friend whose child was an out-patient here, and was under treatment for whooping-cough. Ten days after the visit of this friend, who did not bring her child with her, the infant showed the first symptoms of having been infected. The case is brought under your notice chiefly for one reason, to show the very infectious character of whooping-cough. Similar instances to this one have come under my notice, and will probably occur to you in the course of professional experience. It is in private practice that the best, indeed, almost the only opportunities of studying this disease present themselves; for, naturally, cases are excluded from our hospital, except as out-patients, and it is quite impossible from seeing a child once or twice a week for a few minutes, to become acquainted with the many and strange phenomena of this disease.

I am prevented, for this reason, from illustrating clinically the remarks I propose to make. Here are two more children, aged—the elder 3 years, the younger 3 months. The former caught whooping-cough at school, and has had the cold about a fortnight—that is, she had a dry cough for

a fortnight, and whooped two days ago. The mother suspected what it was as her eldest child, æt. 5 years, had the disease when 9 months old. The infant has had a cough a week, but does not whoop. He is suffering very little. He throws his milk up, and has attacks of cough of considerable violence.

Here is another case. An infant which was ten weeks old when it came here five weeks ago, was a delicate child wasted from improper feeding, or rather artificial food. He improved greatly on very simple treatment, and now he has caught whooping-cough. His mother calls it a cold, and says that he is scarcely less wasted than when he was first brought here: that is, the fever during the last fortnight has reduced him greatly. He has no diarrhœa. He does not whoop but has violent coughing, and is quite exhausted by it.

It is true that the one striking symptom of whooping-cough is exhibited daily in the out-patient rooms, and the ear becomes so accustomed to the peculiarities of the cough that it often requires no history of symptoms to aid diagnosis. That was the case with the first infant. I heard it cough, and though some probably would have detected nothing of a whoop in the sound, those who have seen many infants at this early age suffering from the disease know well that the whoop is a very rare symptom, the reason being simply that a young child cannot vocalise a whoop. It has neither the power nor the organs to do so.

I think that this fact is gradually being recognised by us all. At one time, and not long since, it was believed and taught, unless the whoop was heard, the case was more than doubtful. This was a serious error; indeed, it would be difficult to find a single example of erroneous doctrine so serious as this for reasons which are self-evident.

The peculiarity of the cough is simply that it is laryngeal irritation. The cough of bronchitis differs f

cough of pneumonia; and when either or both conditions co-exist with whooping-cough, the character of the cough necessarily varies; but as far as whooping-cough is concerned, the cough is due to laryngeal irritation. You may hear the same kind of cough in children with large cervical glands, and possibly this fact may have led some to infer that in whooping-cough the glands are affected.

In the successive stages of this disease there are many symptoms quite as important, if not more deserving of observation than the whoop. There are, firstly, the symptoms of feverish disturbance which belong to the stage of incubation, the loss of appetite, refusal of food, rise of evening temperature, and wasting. There is nothing very definite, it is true, about these conditions, and for that very reason they deserve close attention. The study of them is necessary if we wish to understand the nature of the disease, and their diagnosis is sometimes of great importance.

If, therefore, in a family of children the symptoms of whooping-cough are well marked in one of them, but other children have not been infected, it is well to take advantage of the opportunity to study the early symptoms. If any symptoms are more striking than others, they are those of wasting and debility, which are caused by the fever. I think that these effects of whooping-cough are greater than those produced by measles or scarlatina.

There is one more symptom to which I would direct your attention—the symptoms of diarrhœa; usually occurring in hot weather, and not unfrequently diagnosed as the special disease, infantile diarrhœa. It is a very serious, and often fatal symptom. The only observation to be made respecting it is that the laryngeal and pulmonary symptoms usually subside when that of diarrhœa arises.

Rarely, very rarely, indeed, we may observe attacks of vhich are spasmodic in character, and are appa- what similar in origin to the whoop.

On the subject of the complications of whooping-cough it is not necessary to make any particular remarks. Congestion and inflammation of the respiratory organs, and convulsions are frequent, and sometimes very serious or fatal. The history of all the diseases of the zymotic class is in my opinion very interesting. To go back to the earliest records of such a disease as whooping-cough; to read and study the descriptions given of it when it first began to attract the attention of the profession and the public, and then to trace its progress through a long series of years, is, I think, a highly attractive and intellectual literary occupation. More than that it is a very instructive one, for it helps us to understand the disease better than we can from simply studying the works of contemporary writers, and prepares us for those variations which time and circumstances or causes which we little understand, may have produced in the phases and features of the malady,

It is in the works of Dr. Willis, published in 1667, that we find the first clear account of whooping-cough. "This kind of convulsive cough is very frequent among children, and some years lays hold on so many that it seems to be plainly epidemical." Those are the words of Willis as translated in the edition of 1684.

Some have endeavoured to find an earlier description of the disease in the works of Hildanus, published at Frankfort in 1646, but the account is too obscure to justify the opinion that he had formed any conception of the special nature of the malady.

Sydenham, in his remarks on the epidemic diseases of the years 1675 to 1680, refers to the prevalence of whooping-cough, and it is quite clear that in his day the symptoms were known and diagnosed.

The bills of mortality for London, published by Willan in 1678, contain references to the disease, and from then till now but little has been added to our knowledge of its

peculiar symptoms, except that within the past few years attention has been given to the far greater frequency of the disease than was formerly suspected, and to the correction of the error of supposing that the symptom of the whoop was necessarily and constantly present.

Much has been written on whooping-cough which is only to be read by way of warning against errors. I think that when an author treats a serious subject like this in any but the most serious manner he is undeserving of attention or respect. I confess that when I found Niemeyer condescending to mention the idea that a child could resist the spasm and that the rod was one of the remedies which might possibly be advised in some cases, a feeling of suspicion arose in my mind that Niemeyer's experience of the disease must be very limited, and that he knew little of the grave nature of the malady, when he could venture to trifle thus with its treatment.

When a disease like this prevails among us and causes an immense mortality year by year, we are bound to study it in a serious and scientific manner, and not to indulge in hasty ill-considered opinions.

It is to be feared that experiments in treatment will not lead to any satisfactory results. It is better not to indulge in any idea of discovering a specific for this disease. Any one who expresses a strong view on the value of some particular remedy, may be reasonably suspected of insufficient observation and experience. In practice the best plan is to divide your attention between the general and local symptoms, or rather to treat them separately. By the local symptoms I mean the laryngeal spasm, and for this the treatment must be chiefly local. Among the local remedies there is none which gives more decided relief than the inhalation of carbolic acid, a combination such as is used in this hospital, of carbolic acid, oil of pine, and tincture of benzoin. Alum is a popular remedy with honey, and this acts appa-

rently locally. Bromide of potassium and tincture of belladonna iv. to v. grains of one with iv. to v. minims of the other seem to diminish the laryngeal irritability for a time, but in severe cases no great benefit is derived from them. As regards the general treatment we have to consider the symptoms of fever and wasting. Ipecacuanha, small doses of antimony, quinine, and cod-liver oil are the chief agents which may be employed in the relief of these symptoms. The great value of change of air, particularly from London or inland to the sea, is well known, and in the latter stage of the malady is superior to any medicinal remedy.

I will explain the best method of obtaining inhalation of carbolic acid in another lecture, and I will conclude these remarks with the routine treatment, if I may use such a term, which in the majority of a large number of cases I generally adopt. If the disease is in the early stage I prescribe from half a drachm to a drachm of the Mistura Potassii Bromidi et Belladonna of our Pharmacopœia with an equal quantity of Mistura Oxymellis Scillæ, and order the application of turpentine liniment every night to the thorax and back; and the inhalation when possible of the fumes of Stockholm tar, obtained by gently heating the tar or stirring it with a hot poker. This is an economical and effective plan of treating the spasm. In the later stage of the disease the bromide and belladonna mixture should be given only at bed-time, and during the day small doses of cod-liver oil and iron will best repair the condition of wasting.

As the mortality from whooping-cough is much greater in infants under twelve months than in children above that age, it is well to protect the former as much as possible from any risk of infection.

LECTURE V.

Defective Intelligence and Imbecility.

Idiotcy or imbecility is a subject of deep interest. If you wish to study it, or even to know only what every physician ought to know on this matter, let me advise you to visit the Asylum at Darenth, near Dartford, or at Earlswood, near Redhill. Many imagine that the subject is unworthy of much attention. That is the opinion of the ignorant and those incapable of taking the trouble to analyse the various phenomena of idiotcy.

What gives it so much interest is this: that in many cases we clearly see that the conditions of moral and intellectual defect are due to a distinct physiological or pathological cause.

In cases of insanity we are generally at a loss even to conceive what influence has disturbed the brain, and are obliged to confess that the phenomena are quite beyond our present powers of explanation.

It will probably occur to you, if you consider the subject of idiotcy, and observe several instances of it, that the study of its pathology ought to yield some good results, and might perhaps lead to the understanding of the more complex phenomena of insanity. Let me suggest this as one reason for inducing you to give some attention to this subject. In daily life, however, the chief demand which is made on our professional knowledge is such as you can well estimate from the cases before you this morning.

Slowly the suspicions of the mother are aroused that her child is not as other children. At first this difference is thought to be simple backwardness, and the waywardness of disposition is attributed to what is commonly called "temper." Of course the time comes, sooner or later, when the parents seek advice and an explanation of the conditions, and we are required to answer questions of great difficulty if we have had no experience of such cases. We cannot satisfy these inquiries as readily as is generally possible in ordinary kinds of illness, where the parents possess sufficient knowledge to enable them to understand us easily. The reason is this, that they cannot discover the cause of the troubles. The cause is the most important point in their opinion. It is useless to try and make parents understand that the knowledge of the cause of the child's condition is of no practical importance, as far as the management of the child is concerned. You will not, however, persuade parents to follow your advice unless you can throw some light upon this question. You will generally find that there has been a good deal of discussion in the family circle on the reasons why one child should so differ from the others. To them it is a subject of deeper interest than you might imagine. It may be connected with painful associations to which their minds revert with feelings of sadness, perhaps of shame. Be careful, therefore, how you treat the question of cause, for you cannot tell what importance may attach to your opinion.

We will return to these points when we have examined the two children before us. Let us take the boy first, a typical case of idiotcy of a certain class. He is a well-grown boy, 3½ years of age, able to run about, and is as active and strong as most boys of his age. He can hear well, but cannot talk. He fears being separated from his mother. I won't attempt to describe the expression of his face. This would be best done by comparing it with some of our higher mammalian acquaintances at the Zoological Gardens. The child

cannot understand you, and you cannot understand him. He looks at you in somewhat the same inquiring way as a highly intelligent monkey, who seems as if it could understand if one only knew better how, or in what language, to address it. He is not like the deaf and dumb child. He can hear and appreciate differences of sound. More than that he is, like most children of his class, greatly pleased by musical sounds. This fact has been well applied at the Darenth Asylum, where the children are made to move to different parts of the large class-room in the most orderly way by the music of a piano.

Before we ask his mother any questions, let me draw your attention to the fact that the child squints. The right eye seems to be chiefly affected, but there is internal strabismus of both eyes. This adds something to the lack of intelligence expressed in his face. It does more than that; it aids us in our inquiries into the history of the case. I will venture to predict that some injury has happened to the child, a fit or a fall, probably before it was twelve months old. The mother says that this is not so, and that, so far as she knows, nothing occurred to herself to disturb her in any way during her pregnancy. The next question I will put to her is this: Were instruments used at the birth of the child? Yes. All her children have been born with instruments, and that of five only two survived their birth, this one, and one a few years older, with whom there is nothing wrong. The brain of the child, without the least doubt, was injured at the time of birth by the use of the forceps, and these are the results. They are not uncommon, and are almost so well defined that you can say of one child this condition has been caused by some maternal influence transmitted to the infant in utero through the mother; while that is due to influences exerted on the child directly at the time of, or subsequent to, its birth —a fit, a fall, a blow, or injury from instruments. This boy is now beginning to be very troublesome. He is mischievous, and cannot be left alone in safety. For his own sake, and

for his mother's, he ought to be placed in an institution, such as that at Darenth. For the convenience of parents who come to this hospital, we have had directions printed giving such information as they require for sending a child to Darenth. My friend, Dr. Fletcher Beach, the medical superintendent there, kindly arranged this for us. Unfortunately, children are not admitted under five years of age, so that a year and a half must elapse before this child can be sent, and by that time the mother will have overcome the objection she naturally feels to parting with her child, and will have realised the impossibility of managing it at home.

So far as the child's health is concerned, there is no symptom which requires special treatment, and I shall dismiss the case without further remarks. The mother will come here again in a few months, and then, if not before, we will discuss the question how far the conditions we have been observing are due to sensible changes in the brain.

The second case is also one of a class, but a class very different from the last. The girl is two years and a half old, and is a good example of microcephalism, that is to say, of smallness of the cranium. She cannot sit up, or walk, or talk. The legs and arms are wasted and partly paralysed, and they flap about when she tries to use them.

This is a more common case than the last; indeed, it is the form of mental defect to which the term idiotcy is commonly applied. There is no doubt, I think, that the size of the brain is the chief determinant of the mental power of the individual, and when there is no disease of the cranial bones or hydrocephalus, the measurements of the skull will enable us in this class of cases to estimate the degree to which the poor child is affected.

In this family there are three children older and one younger, all of average intelligence; that is to say, they in no way resemble this child.

If you examine the head rather carefully, you will notice

that the measure of the circumference is small, but more than this, the vault of the cranium is shallow and rather pointed, the forehead recedes, and the cranial cavity is clearly considerably less than is indicated by the simple measure of the circumference. It seems to me enough to point out these general characters of the microcephalic skull without entering more minutely into details. The weight of the brain has been ascertained in many such cases, and many interesting observations, anatomical and pathological, are recorded.

The circumstances under which the child is brought to the physician in this class of cases are much the same as in the class last considered. There is this difference, that the mother attaches most importance to the want of power shown by the child to support itself, to sit up, or stand, or move. When the child is in its infancy, and up to the age of twelve months or later, this want of power is shown chiefly in the way in which the head hangs forward or otherwise, according as the child is held.

You will notice how the expression of this child's face is due in some degree to its small size, but much to the ill-developed and receding jaw. There is a sad, grave, listless look which alone is enough for diagnosis, and which you may recognise in the very young infant. We will let the mother leave now, and I will pass on and discuss the question of the cause of this misfortune, which greatly distressed her. It is a subject to be approached with tact and delicacy, much more so than in the last case. Some trouble happened to the mother of this child during pregnancy; not an accident to her person, but, what was more serious, some purely nervous or mental shock. I have learnt this much, that during her pregnancy something happened in connection with her husband, but she refers to it with such evident pain and reluctance that I have not ventured at this first visit to push inquiries into the secrets of the family. It may be that he ill-treated her, or perhaps she had reasons to suspect his

faithfulness, or some business misfortune may have happened, though this last is not probable, for, as far as I have observed, women are happily but little disturbed by this cause, or there would be many more idiots in this great city than there are. You will find if you pursue this line of inquiry that it will lead into the region of speculation in which the metaphysician likes to wander, and shall I say indulge his fancy to little purpose. There is nothing new to be noticed in respect to maternal impressions, except, perhaps, that what is true is unbelieved, and what is not true is imagined to be so. It is sufficient for us to recognise the fact that idiotcy as presented by this child is more often due to some violent disturbance of the feelings of the mother than any other cause. When I asked Dr. Beach, whose experience at Darenth is very large indeed, what his opinion might be on this point, I found that we held the same views, though Dr. Beach told me when he first took office at Darenth he was more than sceptical upon it. You will probably ask by what means the infant in utero can be influenced in this way through the mother. Do not conclude hurriedly because we cannot explain a thing like this that it is not true. That is not the way to improve our ignorance.

This child's condition is more hopeless than that of the first. The physical powers will increase, and the time will come when it will be able to stand and move about; but there is no hope of its ever being able to take care of itself or of being educated to any purpose.

As far as the physician's aid is of service, he has chiefly to treat occasional symptoms of cerebral excitement from which such children suffer. They have long spells of crying, or moaning, rolling or jerking their heads, passing in convulsions or coma, and these conditions succeed one another in such a way as to keep the parents in constant anxiety.

These are the symptoms which we have to advise for during the first two or three years of the child's life. The

remedies are few and simple. Bromide of potassium and tincture of belladonna, five grains of the former with five drops of the latter, may be ordered as occasion requires. Children are admitted into the Darenth Asylum at the age of five years, but in many cases it would be well to remove the child a year earlier, for its presence in a family where there are other children is a sad trial to the mother, and is frequently the cause of her younger ones being similarly affected. An example of this I brought before you not long since. The eldest boy was under my care in 1878, that is, six years ago. He is now nine years of age. He was much in the same condition as the boy whose case we began with to-day. The cause assigned by the mother was the sudden death of an elder child, an infant, two months before the birth of this boy. Now she is coming here with another child two years old, whose condition closely resembles that of her eldest boy. This child's state she attributes with good reason to the anxiety and distress occasioned by the elder one. Thus we see the absolute importance of removing the child afflicted as soon as possible.

I think that you will agree with me that the subject of idiotcy deserves careful study, and that serious responsibilities rest upon the family adviser whenever such cases as those above detailed are submitted to him for his opinion and advice.

LECTURE VI.

Vaccination. Vaccinal Eruptions and their Treatment.

We will discuss to-day the question whether any ill effects can reasonably be attributed to vaccination, and whether there are any grounds for the prejudices against it, which of late years have been gaining an influence over a certain section of the public, It is hardly necessary for me to point out the importance of this matter. It would be impossible to name a question in which the interest of the public is more greatly concerned; for if small-pox is ever allowed to prevail among us, we know well what we have to expect from its ravages. If the prejudices to which I have referred existed only in the minds of the ignorant and uneducated, we could afford to disregard them, but there are some educated and influential persons, who while admitting the value of vaccination, are inclined to treat very leniently, and as though they had good reason, the views of a considerable number obstinately opposed to it, and whose foolish convictions may lead them to injure their own children and society, if they are allowed freedom of action in respect to this matter.

It is our duty therefore, to examine these prejudices, both for professional and personal reasons; for professional because we should otherwise fail in respect for the memory of the great man to whom we owe the inestimably valuable

practice of vaccination; for personal reasons, because it is our duty to oppose ignorance, to spread knowledge, and to benefit our fellow creatures to the utmost of our power.

In the interests therefore, of truth and humanity, let us address ourselves to the serious consideration of this question.

I bring before you a case of recent vaccination. You saw the child fourteen days ago, when it was suffering from an extensive cutaneous eruption, the consequence of vaccination thirteen days before. Let me recall to you the condition presented by the infant and the principal points in the case.

Its age was 8 months, it was born of healthy parents, and previous to vaccination was in good health, with this exception which must be borne in mind, that it had shown a slight tendency to skin eruption or dermatitis. For fear of this condition being increased the vaccination was twice deferred till the child was apparently in perfect health, and the cutaneous troubles had subsided. The mother took him to the calf-lymph station in this neighbourhood thirteen days before you saw him. We found five large brown crusts on the left arm where he had been vaccinated, and the skin of the body was extensively affected with a form of eruption common after vaccination. The arm was much inflamed; the tissue around the dried vesicles was red and swollen. In various parts, but especially on the head, face, and chest, the skin was irritable, spotted with vesicles of different sizes, and discoloured by broad areas of erythema. We examined the left forearm closely. There was one large patch redder than the healthy skin extending over a third of the outer side of the arm. The margin was distinct, slightly elevated, not unlike the wheal of urticaria. Within this area were several vesicles varying in size and shape, some very minute, others well elevated, round, and containing fluid; some few long and rather narrow, but like the others in other respects.

On the wrist there were a few red spots with minute central vesicles. On the face, head, and round the ears were sores which had resulted from broken vesicles, some drying up, others discharging pretty freely. The child was evidently much irritated and constantly tried to scratch itself. The back of the neck and chest were like the arm, erythematous and spotted with vesicles. On the legs, abdomen, and buttocks, there was less to be seen, but from the mother's account, it was clear they were developing similar morbid conditions.

The first sign of any trouble from vaccination was on the third day after the operation, when the skin began to be spotted in different parts with erythema, and three days later numerous vesicles appeared. This at least was the account given by the mother. The symptoms have greatly changed under the influence of treatment. The skin of the face is free from eruption; the swelling and redness around the vaccine pustules has disappeared, and the ulcers have almost healed. A few spots of lichenous character appear on the forearms and on the neck from day to day, subsiding quickly without breach of surface, and attended with only slight irritation and redness. The treatment has been very simple, but it has been strictly followed out. The skin has been well bathed with hot water, that is with water as warm as the child could bear, night and morning, and then dusted while wet with sulphur and starch, fine precipitated sulphur mixed with an equal quantity of starch. Small doses of sulphate of iron and magnesia have been administered internally.

You perceive what a marked improvement has taken place in the child's condition. It has gained flesh, and has a cheerful expression, the best evidence of improved health. Repose and sleep have contributed chiefly to this result. Previously they were impossible from the constant irritation of the skin. It must be allowed that improvement has been

unusually rapid in this case, but it may be observed that an eruption of recent date is more amenable to treatment than when it has lasted for a longer period of time.

When we were engaged on the subject of dermatitis I made allusion to the connection between that affection and vaccination, and some examples similar to the one we have just been examining were brought under your notice. I referred you to Trousseau's Lecture on Sudoral Exanthemata for valuable remarks on this subject, and now let me ask you to read his Lecture on Vaccinia and Vaccination, in which he deals with the popular prejudices against the operation, and treats the subject in a way which impresses the mind with admiration of his extensive knowledge, and original powers of observation as well as of the philosophical and scientific spirit, which he brought to bear upon and explain the phenomena under consideration.

At the International Medical Congress, held in London three years ago, Dr. Behrend communicated observations on vaccinal eruptions. A translation was published of Dr. Behrend's remarks in the *Archives of Dermatology*, vol. vii., No. 4, October, 1881. On the occasion referred to a short discussion followed, in which only two dermatologists took part, but these were the two most distinguished in Europe, Dr. Von Hebra, of Vienna, and Dr. Hardy, of Paris.

It appears to me necessary, before we can hope to arrive at any clear conception of the relation between these eruptions and vaccination, that we should try and explain the more definite eruptions symptomatic of the specific fevers. Have we any reasonable explanation to offer for the difference between a typhoid and a typhus spot on the abdomen? In small-pox we find the mucous membranes are affected in the same way as the skin, and that points of active changes occur upon them which are evidently due to the same cause in cutaneous and mucous tissues alike. In fatal cases of variola the most striking pathological condition is the deep staining

of the tissues with the colouring matter of the blood, and this is due, not to the escape of blood corpuscles from rupture of vessels, but from destruction of the corpuscles and transudation of the colouring matter. It would therefore seem probable that altered conditions of the blood are the causes of various eruptions or discolourations of the skin, at least in the case of the specific fevers. Seeing how the eruptions which follow vaccination are multiform in character, we must be prepared to admit that they are possibly due to different conditions, although apparently arising from one and the same cause.

In some cases the eruption appears very soon after vaccination—on the second or third day—and you might imagine that such an eruption might be due to specific vaccinal fever. The evidence is against such a view, as Trousseau perceived, and as Dr. Behrend makes a point of. An eruption appearing two or three days after vaccination has the character of a roseola, and is not vesicular like vaccinia.

My own experience agrees with Dr. Behrend, therefore, on this question. We come back, then, to what is the cause of these eruptions. You will probably have opportunities of observing that the occurrence of an eruption after vaccination depends very greatly—I should almost say entirely—on the amount of action in the locality of the operation. When the skin inflames round the punctures, then we see eruptions occurring. You will sometimes meet with instances of extensive eruptions exactly similar to those which follow vaccination where they have been due to a wound in the skin from injury or other cause, and where inflammation has followed in the part injured. On referring to my note book for such examples I find the following of common occurrence. Within a period of a few months there were two cases of dermatitis of the head and face following herpes zoster; one of impetiginous eczema after the scratch of a cat; one of

dermatitis following otorrhœa; one of ecthyma of the arms and legs from the same cause; another case of dermatitis from the scratch of a cat; one similar after ringworm; one of ecthyma after chicken-pox; one of dermatitis after an abscess in the arm; another case after chicken-pox. In three cases dermatitis followed the treatment of nævus with nitric acid. These last three cases occurred some years ago, and are not to be included among the former, which, as I have said, followed closely on one another, with intervals of only a few days between them.

I mention the three cases connected with nævus because the children were quite healthy before the operation, and the occurrence of the eruption led me to give some attention to this subject, and to suspect that the professional idea of vaccinal eruptions being only coincidences might possibly be farther from the truth than the popular notion to which so much of the prejudice to vaccination was clearly to be attributed.

Let us now consider how we can apply these views in practice. In the first place we must fully and freely admit that certain effects—evils if some wish it—may follow vaccination; but if we go on to explain how these happen, what a different conclusion must an unprejudiced person arrive at respecting the relation of cause and effect from that which is ignorantly advanced by the opponents of vaccination.

The next question we naturally ask ourselves is this:—Seeing that the cutaneous disorders arise from a local cause may we not possibly diminish, or entirely prevent the possibility of the operation of vaccination being attended with local disturbance?

It is quite clear from the case of calf-lymph vaccination we have examined to-day, that it matters not whether the source of the lymph be from the human subject or from the calf. The local inflammatory action around the vesicles

being the determinant cause of the cutaneous eruption, it is clearly of first importance to take steps to prevent this as far as possible. Seeing, also, that in this case, as in many others, there may be a tendency to dermatitis, hereditary or diathetic, which would favour some form of eruption, may we not explain to parents the difficulty in which we are placed, and so escape the mistaken accusations which they might make against us or the operation ?

In practice the following plan may be adopted:—Recognising the fact that lymph ought to be taken on the fifth or sixth day, and not later, for fear of any products of decomposition being mixed with it, vaccination should be performed in *one point* only; and, further, that in the introduction of the lymph only the slightest injury should be done to the surface—that is to say, only the superficial layer of epidermis should be removed. We know well that the inflammatory process has a tendency to spread along the subcutaneous tissue very readily, and when we recollect that the skin of the infant is far more delicate than in the adult, we ought to limit the depth of the incision just sufficiently to expose the vaccine lymph to the absorbent action of the superficial lymphatics.

By vaccinating in one point only, we diminish considerably the probability of local inflammation, and though it may be allowed that three punctures afford more certain protection than one, I have satisfied myself of the great advantages of the plan that I am now recommending to you.

There is another matter, however, of considerable importance, and on which I must say a word before concluding. After vaccination has been performed, and the lymph has been absorbed, local inflammation may be prevented to a surprising degree by local treatment. By fomenting the arm with hot water night and morning, dusting it with zinc oxide, starch, or precipitated sulphur, and then protecting it

with a covering of lint and plaister, the vesicle will pass through its various stages with little irritation, pain, or trouble to the infant. Instead of the arm being inflamed, even to the extent commonly noticed, the great object which we ought to keep in view is attained, namely, the production of a certain constitutional effect, which, after all, is the purpose of vaccination, with the least amount of local injury, which is certainly no necessary part of the operation, but is the evil most distinctly to be avoided.

LECTURE. VII.

Infantile Paralysis.

"I, who in a city had probably been condemned to hopeless and helpless decrepitude, was now a healthy, high-spirited, and my lameness apart, a sturdy child—non sine diis animosus infans." (*a*) Thus Sir Walter Scott described himself at the age of four years. He tells his history from the age of eighteen months, when attacked with infantile paralysis of the right leg, in such graphic language, and with such truthful and exact detail that his account of this singular malady may be read with profit and pleasure, even by those who are studying the subject with a strictly professional object. There is no reason to believe that this accident of very early life is more common now than in those days, but if we compare the state of knowledge at that time with what it is now, we cannot but feel surprise and satisfaction, at the striking progress which has been made in medical science of late years, and especially in the class of diseases of the nervous system, in which infantile paralysis is included. It is unnecessary for me to give any general description of the malady, for its symptoms are generally so well know that only rarely they escape detection. Occasionally, however, cases present themselves to our notice where some little care is required before we can make up our minds on the question of diagnosis. Such a case we have before us

(*a*) "Memoirs of Life of Sir W. Scott, Bt." By J. G. Lockhart, vid. Cap. 1.

now. This boy is seven years of age, he is a delicate looking boy, and not well developed. He is thin and rather feeble, and nervous; yet he is intelligent, is in fairly good health, and manages to walk about well though with a slight, almost imperceptible limp with the right leg. He has been under treatment for some time for rickets, without improvement. If we watch him as he walks across the room the right leg seems to be weaker than the left. The limb seems to be shorter. The knee looks as if it bent a little inwards, so that the possibility of the boy being knock-kneed might well suggest itself; and we can easily understand why he has been treated for rickets.

The knees are certainly nearer one another than in well formed boys of his age, but there is a slight difference between the two knees. The right patella seems somewhat flatter than the left, and the knee-joint seems to bend a trifle backwards. Note this difference for it is important, and is enough to make us doubtful of the previous diagnosis. As the boy stands observe how he hangs his hands. The right is turned just a little more than the left, so that the back of the right hand looks more forward, and the palm more backward.

The next thing for us to do is to compare the measurement of the two legs. There is a difference as you see of nearly half-an-inch between the circumferences of the left and right calves; and the same between the measurements of the thighs. The difference is small, but important. If you let the boy grasp your fore-finger as tightly as he can, first with one hand and then the other, there is, I think, a difference in the tension he can exert in favour of the left hand. His mother gives no account of any kind which would aid in the diagnosis, except that he has been noticed to walk slightly on the right toe, and she tells us that his father has lately raised the heel of his boot about half an inch. There is no doubt in his mother's mind of the

difference in size between the two legs. She has seen that for long past. We can obtain no account of infantile illness; there has been no fit or other symptom of nervous trouble.

The first sign of anything being wrong was when he began to walk at the age of eighteen months. Now, to make a mistake in diagnosis in a case like this, and treat it as one of rickets when the conditions are due to a central lesion of the nervous system would be a serious blunder, though it might be a pardonable one. The child's health would be improved by general tonics; and so far as his lameness is concerned no great disadvantage would result from avoiding all special treatment, the difficulties arising from it being so slight. There are many cases like this. Well-marked infantile paralysis is easily diagnosed, but many cases of slight paralysis are not detected till the somewhat dull observation of parents is aroused by the remarks and solicitations of others more appreciative than themselves of the defects of the child.

You know that in certain cases of rickets there is a considerable loss of power, at least, the legs hang or dangle in such a helpless way as to make one hesitate for a moment in deciding the cause of the condition.

I can also conceive it possible to be in temporary doubt in certain cases of chorea, for now and then we see chorea assuming, in rather a striking manner, the features of a paralysis. I am speaking now from the remembrance of some uncommon cases which have come under my own observation.

Such possible mistakes however, can be avoided if we are properly careful. The well-known change which occurs in paralysed muscles, and their rapid atrophy enable us to apply the simple test of measurement; and by comparison between the healthy and affected limbs to decide the question.

Let me now explain why the paralysis of infancy is well

worthy of our observation and attention. It is not because it demands care in treatment, and requires us to understand the mechanical principles on which that treatment so greatly depends; but because there are many nervous accidents which occur in early life, the effects of which as they are more or less permanent, so they influence to a degree you would hardly imagine the future life of the individual. This undoubtedly was the case with Sir Walter Scott, and probably with Lord Byron, whose lameness was due, I imagine to some similar nervous lesion.

Recently the chief direction taken by those who have been interested in this subject has been that of pathological rather than clinical research. The pathological study of infantile paralysis is not possible however for those engaged in ordinary practice, and must be left to the few who are qualified by circumstances and special knowledge for such investigations. The clinical study of the subject is possible for all. I mean the independent and thoughtful observation of every case that comes under notice.

It seems to me extremely probable that the lesion of the nervous system which occurs in such a case as we have been considering is a much more common occurrence than is generally supposed.

More than a hundred cases have passed under my personal notice at this hospital alone in all of which there were clear reasons for concluding that the lesion had occurred in the spinal cord; but when I reflect upon the histories of some of these cases, and particularly upon those details which were given of the attack which immediately preceded the paralysis I am led to ask the question whether lesions in some part of the brain, very similar in nature to the spinal lesion, which causes paralysis of the muscles of extremities, are not generally the cause of that common form of paralysis which is indicated by strabismus, or of those rarer defects in the senses of hearing and of speech which we occasionally meet with.

Of course such a view as this must be advanced as only theoretically probable until supported by pathological evidence. At the same time we are fairly allowed to reason by analogy to a certain extent, and give proper weight to deductions drawn from clinical observation.

You are probably well acquainted with the valuable contributions of Prof. Charcot to our knowledge of the pathology of infantile paralysis. His lectures contain not only the result of his own researches, but likewise a distinct historical statement of the work of others. For this reason they should be referred to frequently.

The practical treatment of the deformities of the limbs which commonly occur in this form of paralysis, has been most ably dealt with by Volckman, whose lecture in vol. lxvi. of the New Sydenham Society is deserving of careful perusal. Volckman has explained the reason for deformities occurring on correct mechanical principles; clearly showing that these must be understood and appreciated by those who would attempt to treat such deformities. I have derived so much interest, and so many suggestions from Volckman's arguments and remarks, that I strongly recommend you, if you are not already acquainted with the lecture I refer to, to consider it with attention.

When reading Sir Walter Scott's account of himself, and recalling certain cases that have come under my observation, I have been struck by the fact that the total neglect of all kinds of mechanical treatment has in some cases at least, been attended by apparently little if any disadvantage.

Let me mention one case in particular. A short time ago a girl, 11 years of age, came here with her mother, who had brought her eight and a half years previously, with paralysis of the right leg. The hospital letters and my notes made at that time had been carefully preserved. We were able therefore to complete the history of the case which thus extended over a considerable period.

Soon after she began to walk, she went to bed one night, well as usual, and in the morning the right leg was found to be paralysed. Four months passed before she was brought here, and the leg was then much wasted. She remained under observation for some months, no special treatment being purposely adopted, as the child was unable to walk. Distinct, though simple directions were given for keeping up the temperature of the limb, such as gentle rubbing night and morning, douches of warm water, and extra covering both day and night.

At the age of eleven we found the limb somewhat wasted, but the girl walked with only a slight limp. The toes pointed outwards, but there was no turning outwards of the sole of the foot; in walking it was planted fairly down on the ground. The mother had been careful to continue the same general treatment of warmth and friction during the interval referred to, of more than eight years, and to this I am inclined to attribute to a very great extent the fact that all tissues of the leg had been prevented from more marked wasting. From this case and others like it I have come to the conclusion that we can promote the nutrition of all structures and tissues of a paralysed limb by simple artificial means, the most active of which is undoubtedly the stimulus of heat.

It is thought that electricity is of much value in the treatment of paralysed muscles. I have given it a fair trial in a large number of cases and have formed the opinion that no distinct benefits are obtained by it. When a child is brought for the first time, some months after the paralytic attack, we can use the battery to test the extent of the paralysis, that is to say, we can distinguish the muscles which are affected. It is useful, therefore, as an aid to diagnosis. But it seems to me that if electricity is to be used as a stimulus to nutrition, we must employ it in a different way. We might conceive it possible, that if a gentle current were kept up for several hours a day through a paralysed muscle, the nutrition might

be stimulated, much in the same way that muscular tissue can be developed by exercise, but I do not think it reasonable to look for any decided effects from the occasional use of the battery, say once, twice or thrice a week for a few minutes at a time. And these theoretical considerations are certainly confirmed by clinical experience. I have watched carefully the conditions of a paralysed limb, during periods of three months and six months, when the ordinary method of electric treatment has been alternated with no treatment of the kind, and as I have said without obtaining any difference in results. Volckman's opinion of the value of electricity is very distinctly expressed. "Little," he says, "is to be gained with the much belauded electricity, whether you use the induced or constant current."

I have something yet to say about the use of the battery which has not been considered as it deserves, and my remarks will apply to some extent to the use of instruments and other mechanical appliances. You will generally find that, for some time after an attack of paralysis a child is liable to disturbances of its nervous system which would lead you to fear some form of convulsive seizure. The symptoms are similar to those which you are told attended the original attack; feverishness, cerebral excitement, startings and cryings, and then some hours of prostration; followed by distinct evidence of a temporary increase in the paralysis. I have in my recollection a case of partial paralysis of the right leg in a child between five or six years of age, where every few weeks there was a disturbance of the kind. Six months after the first attack he had another attack resulting in partial paralysis of the arm and entire paralysis of the leg, and three months later a third attack in which he died. It was a matter of great regret that in consequence of the patient living at some distance from town we were unable to make the necropsy in time to preserve the brain and spinal cord for pathological examination.

This I need hardly say was an uncommon case, but I have

so often received accounts of a similar kind that I think it becomes a matter for serious consideration. It has generally been noticed by the mother, that excitement or fatigue has induced an attack, and particularly the visit to the physician for the electric operation. The fear and pain to which children may be exposed, if we pass powerful currents through the muscles, are very liable to disturb the nervous system in a serious way, and instead of conferring any benefit by our remedy, we really do more harm than might be conceived possible.

Let me advise you therefore to consider carefully the general condition of young children before any risk is incurred of this kind, and give time for the nervous system to recover itself from the effects of the violent shock it has sustained from the original seizure.

Now with regard to instruments there is need for the same caution in their use.

The novel sensation of wearing a boot or splint is a cause of actual distress to some children, and mothers are naturally much disposed to disregard the complaints of a child when they are under professional orders, strictly to be attended to.

We ought to wait therefore before we advise mechanical treatment, and give similar sensible advice to that of Dr. Rutherford, when he sent young Walter Scott away to Sandy-Knowe. This tendency to nervous excitement in paralysed children should be treated much in the same way as we treat the threatened convulsions of infancy. This I conceive to be the special duty of the physician before the mechanical treatment of deformities is undertaken, the principles of which I have said are so fully considered by Volckman.

There are some further details in the use of heat and friction which we will consider on another occasion, and I shall conclude this lecture with a few very interesting extracts from Walter Scott's personal history.

"When the efforts of regular physicians had been ex-

hausted without the slightest success," . . . . " the advice of my grandfather, Dr. Rutherford, that I should be sent to the country to give the chance of natural exertion, excited by free air and liberty, was first resorted to." " Here at Sandy-Knowe, the residence of my paternal grandfather, some one had recommended that so often as a sheep was killed for the use of the family I should be stripped and swathed up in the skin warm as it was flayed from the carcase of the animal. In this Tartar-like habiliment, I well remember lying upon the floor of the little parlour in the farm-house while my grandfather, a venerable old man with white hair, used every excitement to try to make me crawl.

" This must have happened about my third year.

" When the day was fine I was usually carried out and laid down beside the old shepherd among the rocks or crags round which he fed his sheep. The impatience of a child soon inclined me to struggle with infirmity, and I began by degrees to stand, to walk, and to run." Finally, he says, "my frame gradually became hardened with my constitution, and being both tall and muscular, I was rather disfigured than disabled by my lameness. This personal disadvantage did not prevent me from taking much exercise on horseback, and making long journeys on foot in the course of which I often walked from twenty to thirty miles."

LECTURE VIII.

Diarrhœa, or Intestinal Catarrh.

We will consider the subject of diarrhœa this morning. It is the commonest malady of infancy and childhood; the one that in family practice we are required most frequently to treat. To do this successfully we must have clear ideas upon its pathology, and be guided by judgment and experience in the details of treatment. In the history of most cases you will find as a rule that the illness began in a distinct and rather sudden way. It is true that some weeks or longer may have elapsed since that time, and that you have to deal with a diarrhœa that has become chronic; but this is a condition that has generally succeeded to an acute attack. The cause is usually exposure to cold, and such exposures occur more frequently in hot than in cold weather. Exposure of the feet, legs, and lower parts of the body of an infant is more likely to occur in hot weather from the fact that these parts are but little covered in the summer time, and are much less protected than the parts above the waist. The sudden attacks to which children seem to be very liable when at the sea-side are due in by far the greater number of instances to cold, induced by wet feet or paddling in the sea, These attacks are serious. The inflammation and diarrhœa are active, the pain is often great, there is much straining and spasmodic contraction of the bowels; there may be discharges of blood with the mucus, and there is often prolapsus of the bowel. The prostration caused in a few hours may be very

marked, and all the conditions which you are called upon rather suddenly to deal with may present the most serious aspect. For these reasons it is very important, as I have said, to have clear ideas upon the nature and proper treatment of such sudden attacks. When the case has changed its character, and the symptoms after some abatement have assumed a chronic form, it is still important to know how to treat them.

The disease may be regarded as an acute catarrh of the intestine. The contents of the bowel are first discharged, then there is an abundant escape of watery bilious fluid, which probably flows from the great and small glands which excrete into the bowel; then the mucous membrane suffers, and while the quantity of the discharge is diminished, its character changes to a thick glairy mucus, often tinged with blood. At this stage the spasm and straining is most severe. These stages may succeed one another rapidly, that is in twenty-four hours or less. Each time that milk or other food is given, in a few minutes there is spasm, and in common language, "everything runs through the child." Although it takes fluid eagerly, the stomach generally refuses to retain it, and if some passes into the bowel, much is rejected by vomiting. Such an attack I have described is a severe one, and more rare than less acute attacks, but in each the conditions and symptoms are similar, and only differ in degree. Improper food, acid milk, or if an infant is being suckled, some derangement of the mother's health, may cause intestinal catarrh. Under these circumstances the attack is generally less acute than when cold has caused it.

You may form some idea of the condition of the bowel from the appearance of the prolapsed rectum, two or three inches of which are often everted, and are seen to be red, congested, and covered with glairy mucus.

If you leave a child in this state alone, without treatment or food, the acute inflammation may subside in the course of

a few days, but the catarrh generally continues for some time, varying according to food and other circumstances. But the question we have to decide is what is the best treatment. If you follow a certain routine practice, you will order some carminative draught of no very active property, with perhaps a gentle opiate. Such treatment will not do any harm. At the same time it won't do much good. Opiates will not stop the diarrhœa or spasm. Half measures are of no use in these severe cases. The most important agent for the relief of the symptoms is heat. The child should be placed in a bath of temperature 100 deg. or higher, and kept in the bath for half an hour or longer. On taking it out a large linseed poultice should be applied to the abdomen, warm bottles placed in the cot, and the child left thus for two hours or so, when the poultice should be renewed. A powder composed of two grains of calomel and one of Dover's powder should be mixed, and if the child is under twelve months old one third should be given every four hours. If the age is above twelve months, one half the powder should be given, and repeated in six hours.

In the former case two powders may be sufficient. The administration of the third powder will depend upon circumstances to be judged of by the medical adviser.

Before giving the second powder the child should be again put in a hot bath, and the poulticing repeated as before. Nothing more to any purpose can be done during the second twelve hours. At the end of twenty-four hours a small dose of castor oil with a few drops of compound tincture of camphor should be administered, and the poultices renewed every four hours or so.

With regard to food, it is better to give little, if any. Some well-boiled arrowroot and milk, thinly mixed, may be tried, but if the stomach rejects it there is no use in pressing it. It is very usual to order brandy and milk; but there can be no question, judging by experience, that brandy is harmful

and apparently irritating to the mucous membrane. I have seen such opposite kinds of treatment adopted in cases of acute intestinal catarrh, that from the ill success of others I have formed the very decided opinions I entertain, as much as from the success of the plan I am advocating. It is the old-fashioned plan of treatment, and it seems to be one quite consistent with the pathology of the disease.

I have heard of ice being applied to the abdomen, and cold compresses, with results by no means satisfactory.

During the week following the attack we have been considering great attention must be paid to diet. Arrowroot and milk and water, or some such farinaceous food, is preferable to beef tea or other animal fluids, however much disposed we may feel to try to restore the child's strength by the latter means. We must wait till the inflammation of the intestinal mucous membrane has subsided before animal fluids can be borne. During this week it is proper to administer every night a powder composed of a grain or a grain and a-half of hyd. c. creta with a third or half a grain of pulv. Doveri, according as the child is below or above twelve months old. This plan of treatment may seem rather active, but it has the advantage of restoring the bowel quickly to its healthy condition, and of preventing the chronic diarrhœa which so commonly succeeds the attack.

If several weeks have elapsed before the child comes under your care, and its usual kinds of food have been tried without success, you will find that the best plan of treatment is to deal with the case very much as though you were treating the acute symptoms, but instead of calomel, let grey-powder be given in two-grain doses for two or three successive nights, and then follow the plan recommended during the week succeeding an acute attack, not forgetting the occasional hot bath and the poultices to the abdomen.

When the mucous membrane has suffered for some time it is highly probable that the mesenteric glands will be

secondarily affected, and the nutrition of a child is thus seriously impaired. Flatulent distension of the bowel prevents us from detecting any enlargement of the mesenteric glands; nor, indeed, is the glandular enlargement as seen in post-mortem examinations so decided as to allow itself to be diagnosed during life. The glandular inflammation passes through the ordinary stages of hyperæmia, as seen in typhoid fever, then of diminution of redness with change of colour to a yellow tinge, due to fatty infiltration, and this state may continue for many weeks, until the gland ducts are again free. In scrofulous children the glandular inflammation extends to the stroma of the glands, and the more or less ordinary forms of tabes mesenterica are developed. It is very generally imagined that the condition of chronic catarrh is to be relieved by change of diet, and thus we find parents, particularly in the better classes of society, expending much trouble to little or no purpose in trials of the various infant foods of popular reputation, or, if the child be very young, in hoping for some advantage from a wet nurse. Whatever may be the diet, the process of digestion must be imperfect while the morbid condition of the intestinal canal exists, and this condition requires to be treated by appropriate remedies, We may be sure that if some such simple system of feeding as, for example, that recommended in the Rule sgiven to patients at this hospital, be not satisfactory, no kind of food will succeed better; at least, such is the result of my own observation. When the mucous membrane has recovered itself, when the diarrhœa and spasm have ceased, and simple food is being fairly well digested, we may begin to administer some stimulating tonics, such as the dilute mineral acids with iron and quinine, or with small doses of some vegetable aperient, such as rhubarb or jalap. As a rule the acids are more suitable than the alkalis, although the flatulence and acid fermentation which is the apparent cause of the flatulence would theoretically suggest the administration of alkalies and carminatives.

It is well to give special directions that the abdomen should be covered warmly with wool or flannel, and that the legs and feet should be carefully protected from cold.

I have only attempted in these remarks to give a general view of the causes, pathology, and treatment of intestinal catarrh, and beg you to consider it as merely a preface to further details which clinical examples from among the patients here will afford the means of illustrating.

LECTURE IX.

Ringworm.

A large number of cases of ringworm pass under our observation and treatment every year, and we are compelled to give some attention to the subject. This morning you have seen five cases, two in one family, two in another, and the fifth where the fungus is of very recent growth, only one spot on the right cheek having appeared.

Of late years ringworm has increased immensely among the children of the working classes, and has also been a source of trouble in many of the higher class schools, both public and private. As you will probably be required to advise some day upon the best method of its treatment, as upon the prevention of its extensions, I propose to give you as briefly as possible the results of my own observation and experience. Two of the children we have just seen, we were told, had already been for several weeks under medical treatment. Strong acetic acid had been used, and upon the heads of the children there were large areas almost denuded of hair, and in a state of inflammation. The ringworm was not cured, for in the centre of one of these areas, less inflamed than the others, we found abundant spores; that is to say, when we pulled out some of the young hairs and examined them with the microscope, we had no doubt of the presence of spores. Now the questions which lie at the root of the matter of the treatment of ringworm are clearly these.

What is the nature of the fungus? What are the laws of its development, and under what circumstances is its growth favoured or prevented? We must try to answer these questions before we can hope for much success in treatment, or be able to reconcile the various and rather conflicting reports of the value of different remedies.

The growth of the spores of the tricophyton is rapid. A single spore has been seen to pass through the stages of protrusion, elongation, division, and final separation into independent spores, in the course of less than forty-eight hours. This has been observed in artificial cultivation of the spores in vitreous humour by Dr. George Thin, whose interesting and valuable results were published in the Proceedings of the Royal Society in 1881. It is probable that the stages succeed one another more rapidly in the human skin, if we may judge by the way in which a spot of ringworm extends from day to day, as for example in a case like that of the child who has one spot on her cheek.

There is no difficulty, on this account, in destroying the fungus when we find it on the skin, by the application of any of the common sporicides. It is another matter, however, when the spores have made their way from the surface to the hair bulbs. They are then beyond the reach of destructive agents, and may resist treatment with great obstinacy.

It would appear from Dr. Thin's experiments that the spores of the trichophyton are influenced in their growth very easily indeed, and that they are most delicate and sensitive organisms, requiring special conditions for development.

You can understand why in hospital practice, poor success attends the common method of treatment, for if an interval of a week is allowed to pass between each application of the sporicide, the fungus has clearly time to grow far more quickly than it is destroyed; and so we may continue for weeks, or rather months, if the patient is not

tired of coming, while we try one remedy after the other, perhaps with variable, though generally similar, results.

You must leave the treatment of ringworm to the mother or the nurse, who can follow directions day-by-day, and apply the sporicide, at least, twice in the twenty-four hours. It is best, both in hospital and private practice, to reserve to yourself only the right of deciding when the cure is complete, and the child is no longer a source of danger to others.

The treatment can be carried out perfectly well by a person of the commonest intelligence, if the directions given by the medical adviser are carefully and regularly attended to.

You have seen, from the two cases before us, what objection may be made to the use of such agents as acetic acid. I have not seen any advantage obtained from the use of sporicides actively irritant of the cutaneous tissue, and producing such results from inflammation as we have seen in these two children. On the head of the younger of them, an infant under two years of age, there are several inflamed areas, discharging serum and pus, and for the present nothing active can be done until the inflammation subsides. And so with many other agents, notably croton oil and chrysophanic acid to which the same objections must be made.

The theory on which they are used is simply this. Seeing that the fungus does not grow when entirely immersed in a fluid, as was proved by the experiments of Dr. Thin, it might seem probable that by exciting inflammation and the exudadation of serum around the hair bulbs, the same effect would be produced as by immersion; that is to say, the fungus would be killed by excess of fluid. However reasonable this theory may be, we must check its application by clinical results, and as far as experience goes I am bound to say that results are not very favourable to the theory.

Happily there are several sporicides quite sufficiently

certain for all practical purposes which do not occasion active inflammation; and the question we have to consider is, not so much the special activity of any agent, as the special way in which it should be used.

Applications of the agent must be frequent in order to prevent the disease from extending, and we must try further to reach the hair bulbs by gentle and continuous friction. We also have to consider the circumstances of the family, and not inflict needless discomfort by using some malodorous combination which may make the suffering child a nuisance to every one it comes near. If a child is properly managed there is no great danger of contagion; and the treatment can be carried on with but little trouble or annoyance.

We must impress upon the parent, that if the child has long suffered from the ringworm, its cure will be a matter of time and trouble. And we must try and make the principles of our treatment understood. "What though more slow attained, with lesser risk and surer of its end." We must chose then a sporicide which can be applied frequently and continuously for several weeks without causing pain or exciting much inflammation. It seems to me better to avoid the use of the mercurial salts as constitutional effects may possibly be produced, and preference is decidedly to be given to some one of the innocent substances belonging to the hydrocarbon group and obtained by distillation of wood or coal. Without comparing their relative value I think that we cannot do better than use the best known of this class, and after extensive experience and most satisfactory results, I can recommend to you the following preparation as likely to be successful, even in the most obstinate cases of ringworm. Let precipitated sulphur be mixed in a mortar with sweet oil, in the proportion of about half an ounce of the latter, so that a thick cream is obtained. Then add to this, mixing thoroughly, three drachms of Calvert's carbolic acid, No. 2 solution. This mixture contains the acid

in about the proportion of 20 per cent. It must be applied twice a day, night and morning, to the affected parts, and should be rubbed gently in with the finger or a piece of soft leather.

If the child is brought to you to be examined once or twice a month you will be able to report progress and decide when the treatment can be discontinued. The child's head should be well washed and brushed with soap and hot water two or three times a week, and if the disease has been of long duration it is well to begin by ordering the whole head to be shaved. It is also necesssary to caution the patient against the use of the hat or bonnet that was worn before the treatment was begun. It sometimes happens that the question of the origin of the disease is difficult to discover, and there are two sources which might possibly be overlooked. When a nurse has been in a family where the children have suffered from ringworm she may change her place and introduce it unknowingly into another family. The other source is more common then is generally supposed, and that is domestic animals ; a strange cat or kitten may find its way into a house and carry the spores.

As we frequently observe that in the same family delicate children are more liable to contract ringworm than those that are strong and healthy, constitutional treatment should not be neglected. Your own observation and common sense will suggest all that is necessary and proper in this respect.

LECTURE X.

Convulsions.

Some months ago I was asked to see a boy, æt. 2, who had an attack of convulsions early in the morning. The medical adviser of the family saw him very soon after the fit, and after staying in the house for two hours, left with the assurance that there was no reason for anxiety. Half an hour after he had left the child had another attack, and as the immediate attendance of the first practitioner could not be obtained, another was called in. I saw the child in the afternoon, between seven and eight hours after the first fit.

This was the first time such an attack had happened, and there was no cause except probably that the boy had eaten too largely of uncooked French plums.

We ordered a full dose of calomel, to be followed by castor oil, and then later some bromide of potassium and belladonna. The parents were told that it was more than probable that the fits might return during the next few days, but that as they were not due to any injury to the brain such as a fall or blow, when the digestive organs were relieved the nervous excitement would probably subside.

A few days later I was summoned again, and learnt that the fits had returned, and that a physician of reputation for his knowledge of nervous diseases had seen the child, and had said that he thought it would probably grow up an epileptic.

I was told that the undigested fruit, which was the

probable cause of the attack, did not pass from the bowel for three days, although the calomel and castor oil first ordered acted well during the night after it was given, I distinctly repeated the opinion expressed at first, that the fits might recur, but that they would be less frequent and less violent, and would subside soon. This happened during the next fortnight, and when the child had been quite free for three weeks it went out for a walk. The excitement was followed by a fit, but that was the last, and there has been no attack since.

This case illustrates the difficulty which even the most experienced of us are sensible of, namely, that of being able to predict the final issue of a convulsive attack.

The opinion that this child would not have a second attack was more likely by far to have proved correct than the other opinion that he wonld grow up a confirmed epileptic; and still greater probability was given to the former by the fact that an elder boy had suffered in exactly the same way, at the same age, from one attack only.

When a very young infant has convulsions, that is to say, when it is only a few days or a few weeks old, we ought to take a serious view of the case. The fits usually recur, and the result is often fatal; or if a child of five or six years of age or more has a convulsion there is then more probability of its recurrence and of the case becoming distinctly one of epilepsy. But speaking from personal experience, I should say that confirmed epilepsy is not a result of infantile convulsions; while convulsive attacks about the time of dentition, that is, between the ages of seven or eight months up to two and a-half or three years, are generally the least serious in their character.

The reason why convulsions in very young infants are so serious is that there is probably some cause for them of a more grave nature than the temporary distur
digestion or dentition to which fits are usually

later period; some congenital defect, some subtle maternal influence which has probably been at work previous to the birth of the child, or what is apparently the same thing, has been transmitted soon after birth from the mother to the infant. Many instances of this kind have come under my notice, but one in particular I shall mention, for it illustrates in a striking manner the subtle influence of the mother on the infant. If I may use a parody, there is something more between mother and child than is dreamt of in our pathology.

Three days before the birth of her sixth child, a lady was obliged to send home a little girl, a foster-child who lived with her own children, and to whom she was much attached. She was delivered well and safely, and was suckling the infant, when five days after confinement intelligence was brought her that her foster-child had been accidentally burnt to death. She continued to suckle, but twelve hours after she heard the news her infant had a severe attack of convulsions. The fits recurred daily for a period of about three months, when the child died. When an infant has gone on well as a suckling for some days or weeks and then has convulsions, there is the greatest probability that the cause of fits is some maternal trouble, and it is best to order the infant at once to be weaned.

To-day you have seen a case of this kind. The infant is between three and four months old, is well nourished, and was imagined by the mother to be teething. There was not the least sign of this, and without further inquiry I asked, as you will remember, what trouble she had had at home. She seemed a little surprised at the question, and simply answered that she had had some serious trouble, and had been much put out, but would not say what it was. I advised her to wean the infant. We shall see how matters go on, but the probability is that the fits will continue for some days or perhaps weeks, and that under the influence

of bromide of potassium and belladonna they will subside in time.

I have been disposed to think that cardiac defects are more often the cause of early convulsions than is supposed—I mean congenital defects, or what is nearly the same thing, some defect in those very important and extraordinary changes which occur during the first few days after birth in the organs of circulation. It is true that we may not be able to diagnose these peculiarities, because they are not sufficiently decided to cause those signs or symptoms by which congenital heart disease is recognised; but we so often find the action of the heart irregular and hurried, and the cardiac pulsations greatly increased in cases of recurrent fits in infancy, that now I always examine the heart when such symptoms are present. The question which we are anxious to decide in most cases is what is the special cause of an attack. Admitting that fits are due to many causes, we naturally try to satisfy ourselves on this point before treating a case.

The history may help us, but it may, and often does, not do so. We may even be misled by the statements and opinions of the parent or nurse. It is better to try to diagnose the cause by clinical examination, and the chief point which I think is of most importance to notice is the evidence of cerebral or nervous disturbance succeeding the fits, or intervening between them. Supposing an infant recovers from the fit, and with the exception of looking rather pallid and exhausted, is in all other respects apparently as well as before, we may conclude that there is no distinct morbid process in active operation in the brain or spinal cord, and that the cause of the attack is in some other organ. When, on the contrary, that most delicate indication of cerebral disturbance is present, the vibration of the eyes known as nystagmus, or some similar affection of the muscles of one or both eyes, we may conclude that the

brain is suffering, either primarily as in cases of instrumental delivery or obscure maternal influence, or that the convulsive attack has produced a more or less permanent injury to the brain.

For these reasons, then, we judge of the probability of a recurrence of the fits by the condition in which we see the child in the intervals between them. There does not seem to be any other guide to prognosis.

What, then, is the general principle on which we are to treat the eclampsia infantum. If the fits are due primarily to brain trouble, that is to say to some pressure or injury, causing hæmorrhage or inflammation, we have only to treat the nervous symptoms very much as we should treat them in adults; but in a case like that of the boy who had eaten the plums, it is clear that the first object in view is the removal of the cause by purgatives. For this reason the old-fashioned treatment with calomel was not as a rule unwise. There is no doubt but that bromide of potassium and belladonna are powerful agents in quieting nervous excitement, and by the judicious use of these sedatives after active purgative treatment when necessary, and in most cases it is necessary, we may do all that medicine is able to do in controlling the convulsions.

To a child of one year old you may give from three to five grains of bromide of potassium, with three to five minims of the tincture of belladonna, and repeat the dose every three or four hours for a day or so, and then give only one dose at bed-time for three or four days following, or so long as symptoms require.

LECTURE XI.

Infantile Syphilis.

It is impossible for me to urge upon you too strongly the importance of the study of infantile syphilis. It is the key to the solution of many of the most interesting questions connected with this disease. Trousseau characterised it as "one of the most delicate and most controverted questions in pathology,"* and in the same lecture remarks that "syphilis, in whatever way it may be engendered in the system, holds the first rank among those affections the study of which belongs exclusively to clinical science, and does not admit of assistance from any other science. We are shut out from experiments on the lower animals; and experiment limited to the human species is, as you know, liable to a thousand sources of fallacy. It is perhaps by taking syphilis as an example that one would arrive more certainly at the way to give an account of curative methods and proceedings, and of the scientific value of medicine when left to its own resources. Impressed though I am with the importance of this study, convinced though I am of its profitable nature, even when problems are discussed for the solution of which the elements do not exist, I have shrunk from pursuing it, possibly from a sense of the magnitude of the task. I cannot but look back," he says, "regretfully upon the field which I have

* Clinical Medicine, vol. iv. (Sydenham Society's Works, Lect. 81).

abandoned;" and fully realising as he did the probable result of this inquiry, he observes: "Had we only succeeded in establishing on a solid basis the pathology of syphilis in early infancy, the gain to science would have been very precious."

Now, in accordance with my plan of giving you such references as I think you may consult with benefit in regard to this, as I do in the case of other subjects, I would advise you to read the lecture of Mr. J. Hutchinson, in the fifty-third volume of the *Medical Times and Gazette*, 1876, p. 643, "On Colles' Laws, and on the communication of Syphilis from the Fœtus to its Mother." There is also a contribution by Mr. Hutchinson on "The Transmission of Syphilis" in the last volume of the *British and Foreign Medico-Chirurgical Review*, 1877, p. 455, which may be regarded as a part of the former paper. The recent work of M. Fournier, "Syphilis in Marriage," translated by Mr. Lingard, is, I think, the most valuable contribution from a clinical and practical point of view that has as yet been made, and to this, as well as those by Mr. Hutchinson, I shall have occasion to refer frequently. The work by M. Diday*, on Infantile Syphilis is much to be admired for the style and spirit in which it is written, but I cannot say that I have derived much information from it, or much assistance in deciding some of the more important and difficult questions connected with this subject. Assuming that you are well acquainted with the ordinary mode of syphilitic infection in the adult and the sequence of symptoms which occur in such a case, let me ask you to consider that other mode of infection which is almost inseparable from the subject of infantile syphilis—namely, the infection of the mother through the influence of the fœtus, or fœtal infection. As there are three individuals concerned in such cases—the father, the mother, and the

* New Sydenham Society's Transactions.

infant—we have to study the disease under three aspects: the first, that of acquired syphilis, with which, as I have assumed, you are well acquainted; the second, that of syphilis in the mother by fœtal infection; and the third, that of inherited syphilis, or that class of symptoms which characterise the disease when it occurs in the infant, and is inherited from one or both parents.

It may surprise you to be told that it is not more than thirty years ago that very general doubt existed of the possibility of a woman being infected through the ovum. It was believed that infection of the mother was always the result of direct inoculation—that is, in the ordinary way in which it occurs in the case of men. Trousseau states distinctly that at the time he began to work at this subject, inoculation was the only recognised mode of infection; and we find Mr. Hutchinson stating of a paper read by him before the Hunterian Society in 1856: "The special object of my paper was to convince the profession that this mode of receiving syphilis was not only possible, but in frequent operation, and that the taint thus obtained was peculiar, and, for one thing, far milder than that which follows a chancre." It would not be fair to conclude from this that the opinion which was then being contested had been universal, for if we turn to the short treatise of Sydenham on the Venereal Disease, written about two centuries ago, we find this statement: "The disease is propagated by generation, whence it is communicated to the infant by one of the infected parents."* Now, there is a note by Dr. Swan in the translation from which I have quoted the above to this effect: "The first" (*i.e.*, infection by generation) "I much suspect, having never seen the venereal disease communicated from parents to their children; which

* Sydenham's Work, Sw[illegible] translation, p. 306, 1749. The Epistle of Dr. Henry Paman to [illegible] which led to this treatise being written, is dated Lambe[illegible]

has made me imagine that physicians have been somewhat too credulous in this affair, that if possible they might consult the reputation of their patients, by assigning if not the real at least a probable cause of their indisposition, and by that means acquit them of blame." What were the chief reasons for this retrograde course of medical knowledge I will not now stay to explain.

At the present day no one, I imagine, would doubt for one instant not simply the possibility of infection of a woman by the fœtus, but if he had any such experience as this hospital affords, of this mode of infection being, as Mr. Hutchinson says, "in frequent operation." I will now put the question to you, What do you suppose is or may be the probable mode in which infection by the fœtus is effected in this class of cases? Assuming a proper knowledge of the physiology and anatomy of the various structures concerned in the process of generation, in what way would you imagine it likely that the syphilitic virus passes from the fœtus to the mother? The common answer would, I suppose, be through the blood, or, in the words of Mr. Hutchinson: "The method suggested is that of direct blood contagion by the influence which the fœtal blood exerts on that of its mother," and on this assumption the conclusions contained in the paper referred to are founded. For practical purposes it may possibly not make much difference what the exact mode of infection is, for, after all, the clinical features are what we have to study, and clinical facts must form the basis of the general laws we aim at establishing. The answer which Fournier makes to this question is more guarded and more philosophical. He expresses his ignorance in the form of a query. "How does the syphilitic impregnation extend from the fœtus to the mother in the case we have studied? Does maternal infection result from contact with the fecundated ovum, and is it produced in the Fallopian tubes or in the uterus at the period when the ovum is connected to the

mother by no organised graft? Or is it produced later through the medium of the circulation? Or does it pursue any other special unknown method? Upon this point we confess ourselves completely ignorant."

I shall attempt an explanation of the mode of infection, which is somewhat different from that of fœtal blood infection; and how far it is more probable than the latter, and more consistent with the facts of physiology, you will be able to judge for yourselves. It is very rarely that an opportunity offers for us to examine the relation between the ovum and the uterus in the very early period of pregnancy; and you must pardon me if I assume that some of you are not personally acquainted with this particular subject of physiological research. You must therefore take for granted that what I say on this subject is most certainly true and beyond all question of dispute. The human ovum when it leaves the Graafian vesicle may be impregnated apparently before it enters the Fallopian tube, or as it passes down the tube. When this occurs is not of much importance, for there is no sufficient reason for thinking that infection could take place before a connexion of some kind had been established between the ovum and the maternal tissues. The question we have to consider, therefore, is this, When and how is a relation of a distinct nature first established between them; for it is not reasonable to think that infection could take place from simple contact of the impregnated ovum with the surface of the Fallopian tubes or uterus, and any supposition of this kind would at present be quite incapable of proof. For some days after impregnation the ovum is undergoing those changes which result in the formation of the villi of the chorion, so that at the end of from a fortnight to three weeks the ovum has become a globular sphere of nearly an inch in diameter, covered in every part with these outgrowths of the chorion. The process of attachment to the maternal organism is now begun, and essentially consists of an

absolute planting or grafting of the villi into the maternal tissue. If we take a single villus and remove the decidua in which it is imbedded, we can understand how the actual substance of the chorion, and consequently a portion of an infected ovum, is absorbed into the maternal system. No development of blood vessels has yet taken place. That is a subsequent process, and plays no part in the actual union of the ovum with the uterus. If you take interest in such details as these, which I have purposely abbreviated as much as possible, I may refer you to a fuller statement of them in a lecture published in the *Lancet*.* We may defer any speculation upon the different effects which might reasonably be expected to follow inoculation produced in the manner described, as compared with those resulting from fœtal blood infection. In regard to the latter, it is difficult to form any clear idea of the mode in which the poison can pass from the fœtus to the mother through the blood. We know pretty well what are the anatomical and physiological conditions of the placenta, and we recognise the fact that scarlatina, variola, ague, and probably other similar diseases, are transmitted from the mother to the fœtus. There is no reason why by a similar agency fœtal influences should not pass in the opposite direction. How far beyond our clear perception is the solution of many questions relating to this subject I need not remark; nor would I encourage you to hope for much assistance from physiological considerations. as compared with what may be expected from clinical study.

My chief object in this lecture is to point out the necessity of waiting awhile before we form any theories on the questions which have interested most investigators in this line of research. For example, Mr. Hutchinson has tried to prove that there are three modes of infection, characterised

* Physiology of the Ovum, vol. ii., pp. 549, 621, 1873.

each of them by special features—namely, acquired syphilis, the first and common form; inherited syphilis, or that form which the disease exhibits in infants and is derived from one or both parents; and the third, a new form peculiar to the mother, and derived by her not as in the first of these three, directly from the father, but by fœtal blood infection, or at least through conception. It is very important indeed that, although we may admit the fact that the features are different in each of these cases, we should not at present make up our minds as to the disease being transmitted in its entirety. It may be or it may not be so. Clinical facts, as far as I have been able to understand them, are quite as strongly in favour of the disease being transmitted in different degrees as in its entirety. I mean to say that clinical facts rather tend to the view that the special features of each of these three forms may be nothing more than such modifications as we know in other diseases the special virus seems liable to undergo. It is true that since 1876, when Mr. Hutchinson published his paper, the whole question of the effects upon certain diseases which are produced by transmission has been seriously considered and investigated, and I think it will be sufficient if we simply allow that by transmission certain modifications appear to result, but to what cause these modifications are due we are not in a position to explain fully.

It appears to me possible for a virus to produce a partial effect on the human system, and not to complete in one immediate and continuous exertion of its influence all the effects which we are accustomed to associate with the idea of entirety. I should say that cases of whooping-cough, for instance, which have been abruptly terminated after slight symptoms, and in which a second infection after a period of months or more result [illegible] what would appear to be a second [illegible] partial infection in the first [illegible] view, which equally well ex-

plains such cases—namely, that the human system has been in a certain condition other than that of health, and the full effects of the virus have been arrested or modified. Whichever view we incline to, let us be prepared to receive all evidence, for or against, with perfect impartiality.

Let me now ask you to consider what are the chief facts presented to our observation at a children's hospital. We have a good opportunity of studying the last two kinds of syphilis, for we have both the mother and the infant before us at once. The number of cases of the disease is in the proportion of rather over 2 per cent. in the total; as, for example in 1882, of 18,221 out-patients there were 275 cases of syphilis. There is not much to be learnt from the study of these cases without considerable trouble, for the same story is almost always repeated so far as the symptoms are concerned, and in respect to the treatment the choice of remedies is so limited that no great exercise of thought is required to regulate it. We must be prepared to fail in a successful issue in many cases, for infantile syphilis is a serious disease, and the mortality from it is high in proportion to the numbers affected, so that it becomes an easy matter to predict what the probable result of treatment will be, and to give a fairly accurate prognosis of each case—that is, we can say with certainty of one case that it will improve rapidly, and happily this can be said of the majority; those in which little or no hope can be entertained are few, while the number of cases requiring rather prolonged treatment is intermediate between them. If I can determine with any approach to accuracy how these numbers may be related, I will inform you in a future lecture; but speaking from observation alone, I should estimate them as progressing geometrically, and that for example, in seventy cases, we should have ten fatal, twenty prolonged, and forty rapidly cured.

The clinical study of this disease is one, as I have said,

entailing much trouble; for in order that we may have all the data necessary to decide the questions at issue, we must know what the family history of each case has been, and when and how infection was occasioned. Perhaps if I were to state to you the plan we try to follow you would understand more readily the system which I think ought to be adopted in the clinical study of infantile syphilis. We begin by noting the age of the child, whether it has been fed or suckled, the special features exhibited by the disease, and any other facts important to the diagnosis or treatment. We next note the age of the mother, the number of years she has been married, the number of times she has conceived, and with what results; the ages and conditions of the children alive; the causes and other details of the deaths of those she has lost; then the state of the mother's health previous to and after marriage, paying special attention to the existence of such symptoms as would be distinctly of a specific nature. But when we have completed the histories of mother and infant, and have learnt all that we can respecting other children, &c., we consider that the case is only half complete; in fact, it is useless for the most important purposes, and nothing could be learnt from it that is not already well known to the profession. The other half of the case is the history of the father, and it is this part which it is so difficult to obtain.

In the paper on the Transmission of Syphilis, by Mr. Hutchinson, there are notes of thirty-six cases. Of these twelve were probably—that is, almost certainly—cases of primary or acquired syphilis, and twenty-one probable cases of fœtal infection.

In the appendix to Fournier's work, which consists of notes and documentary evidence, we have seven sets of observations. The first of these, Note 1, contains a series of eighty-seven cases of undoubted syphilis in the father, which occurred previous to marriage, with the result that

neither mother nor children were affected. The special form of disease from which the father suffered is noted in every case as the common form of hard chancre. The number of years which intervened between marriage and infection is also noted as a point of great importance. The average period is five years: in some considerably longer, and in many under this average; but in none had a shorter period than twelve months elapsed. Note 3 contains ten sets of cases; they are intended to show what effects the disease produces upon the fœtus, and they are, with only four exceptions, cases of primary infection in the mother. Forty-six mothers gave birth to twenty-seven living children, and death to the fœtus resulted in fifty-eight conceptions. The second set consists of 237 cases, nearly, if not all, instances of primary infection; twenty children were born alive, and there were 145 miscarriages. Note 6 is an instance of all symptoms of the disease in the mother being concealed for six years, though a child was born with the symptoms of it. Note 7 is somewhat similar to Note 5 in its value, and goes to prove that the mother may escape all symptoms, as is shown from fourteen cases, but the children exhibit them.

Now, from these data, furnished by Fournier particularly, we cannot avoid the conclusion that when the mother is infected with syphilis in the ordinary way—that is, by direct inoculation, and which, for the sake of convenience, we may designate by the symbol S_1—the effect upon the fœtus is very serious—that is, very much more serious than when infection has followed conception, which we may designate as S_2. The fact that in eighty-seven cases mentioned in Note 1 no ill resulted either to mother or child proves this; as well as the fact mentioned in Note 7 of the mother escaping entirely, though the effects on the fœtus were more or less fatal. In these fourteen cases the average time which

elapsed between the infection in the father and marriage was five years. I may have to refer to these dates again.

Now, there are two questions which we may consider at this point with advantage. The first is this: Are the symptoms which follow S_1 in a woman very different from those which follow S_2? The other question is somewhat analogous: Are the symptoms which appear in an infant in a case of S_1 different from those in a case of S_2? They are both questions which we ought to be able to obtain aid in answering from the clinical data furnished at a children's hospital; for the majority of cases which come here are those of married women who have been exposed to no risk of infection previous to marriage, and whose husbands have been under medical advice, and have allowed such an interval of time to lapse between infection and marriage as to preclude possibility of primary infection of the wife. Let us take the first question. We have a large number of cases of families in which no symptom has shown itself either in mother or children. We have another considerable number in whom the symptoms have shown themselves in the progeny alone, and the mothers have escaped; and we have a very small number of cases, comparatively, of S_2, where the mother has shown symptoms of infection different from those in cases of S_1. We have really four classes of cases to consider in the event of marriage after infection in the husband, as follows, No. 1: Primary infection of the mother. No. 2: Fœtal infection of the mother, with active symptoms. No. 3: Fœtal infection of the mother, with no symptoms in her, but symptoms in the infant. No. 4: Cases where neither mother nor child presents any symptoms.

With regard to cases under No. 1, there is ample evidence of the fact that the [illegible] the fœtus are of the most serious kind. Fo[illegible]iod t[illegible]aint continues to exert an influ[illegible]ue, with

time and according to treatment; but under any circumstances the effects are serious and prolonged. With regard to cases under No. 2, we have not, as I have said, very sufficient data. This, however, seems to be certain, that if conception takes place at a period when the father has recovered from local symptoms, but is suffering from what are generally known as secondary symptoms, such as present themselves during the six months which follow the time of inoculation, the mother will exhibit more or less well-marked evidences of infection, and that these closely resemble, if they are not identically the same as, the secondary symptoms present in the father. To prove this fact is of course, only possible from complete cases—that is, from accurate details of the condition of both parents, and particularly of the male parent. The probability of marriage taking place when a man is suffering from active secondary symptoms is, it is almost unnecessary to say, very small, and for this reason data of the kind referred to are few. But as far as they go they prove what I have stated, and lead us to conclude that we must look to the state of the father for an explanation of the various effects produced both upon the mother and the fœtus.

In putting forward this view, which is quite an old one, I am ready to admit that we require more data to establish it, but I must point out to you very clearly that there is no evidence against it. All that has been done hitherto has been little better than surmise, so far, at least, as published statements go in this respect. The cases of Mr. Hutchinson throw no light upon this particular question, and unless it be made a special subject of inquiry, short histories of cases of family syphilis would be useless for our purpose. If you analyse Mr. Hutchinson's thirty-six cases you will see that a certain and considerable number are cases of primary infection. In a certain number of cases no symptoms had shown themselves in the mother, and these consequently are

of no use. We have the cases left where the mother has suffered more or less, but in the histories of these no sufficient account, if any at all, is given of the father. The only case is No. 5, and it is doubtful what happened. Mr. Hutchinson is in difficulty, and cannot explain the statements made. This, I think, shows the importance of further research in the direction indicated. I can only tell you what conclusions have seemed to me probably true from the impartial study of such cases as we have at this hospital.

I would now ask your attention to some of the points which appear deserving of consideration as they present themselves in our practice here. There is, first, the variety of symptoms which syphilis assumes in the infant and young child. I do not see how to classify these, or divide them consistently with their probable cause; we cannot speak of such phases in the disease as we designate by the terms primary, secondary, and tertiary. We certainly see very decided differences in the local and constitutional symptoms, and we understand what is meant by an infant having congenital syphilis very badly indeed, or by its having it very slightly. When symptoms of the disease appear very soon after birth they are of a tolerably constant character, and are different from those which appear later; so that we may speak of early and late symptoms. The early are those with which we are all familiar, the most marked being the peculiar cachexia and the symptom of snuffling. The late symptoms are fewer, and occur more rarely than might be expected. The most characteristic are the condyloma ani, and the syphilitic furuncle or gumma, beginning as a nodule deeply seated beneath the skin, and gradually as it approaches the surface becoming softer, and [illegible]ating its existence by a bluish-red colour of the sk[illegible]dightly elevated surface, and with little or no p[illegible] latter symptom[illegible]imes show themselves i[illegible] have previo[illegible]l from the early sympt[illegible]s,

and quite as frequently, they are met with where no previous symptoms have existed. The parts of the body where the furuncles occur are generally the buttocks and posterior aspects of the thighs, and they are frequently more or less symmetrical—that is, they appear in corresponding localities on both sides about the same time.

I think that the clinical study of the symptoms I have thus briefly mentioned will lead to the conclusion that the first set, the more serious, are generally associated with a history in the father of rather recent infection, whether the mother has shown symptoms of infection or not; and that the latter, the less serious, when the date of infection in the father is more remote, and the mother has shown no symptoms whatever ; at least that this is true of those cases where the child has had none of the serious symptoms previously.

LECTURE XII.

Infantile and Family Syphilis.

It is right that I should ask you for some indulgence if I incur the risk of being tedious in the consideration of the subject of Infantile Syphilis. You may be inclined to take the view that there is very little practical use in studying this subject as I propose to do, and that it is enough if we learn to recognise the symptoms when we see them, and can treat a case satisfactorily. Now, so far as the diagnosis of symptoms is concerned, there is usually no great difficulty in recognising them; while the treatment of infantile syphilis may almost be said to be expressed in one word, "mercury." It is not the question of treatment that I propose to consider, nor that of diagnosis; for it would be difficult to give you any information on these points which is not to be obtained from most works on general medicine. You will naturally, then, inquire what object there can be in studying this disease if we exclude all considerations of diagnosis and treatment. Admitting that there may possibly be much to interest those who have the time and disposition to pursue obscure and difficult questions when an extensive field for observation is at their command, still you may feel that such questions are not important enough to occupy the time and attention of the busy practitioner. Let me dispel such an idea from your minds by assuring you that the most extensive field, indeed, almost the only one which circumstances permit, for the solution of the most important and difficult

questions connected with syphilis, is that which is presented to those engaged in family practice. It is most difficult for the hospital physician or surgeon to do more than diagnose and treat the cases which come under his notice, unless he makes some special provision to overcome obstacles in the way of advancing knowledge, and which in the case of syphilis are, for reasons you can easily conceive, very considerable.

Supposing that we take a dozen instances of infants suffering from the disease brought here as out-patients, what do we learn by comparing them one with another, and noting all the differences between them with the utmost attention of details? If we take cases by hundreds instead of by dozens, all that we learn is to recognise the fact that syphilis in the infant is multiform in symptoms; but why signs and symptoms should differ as they do must still remain a mystery. No increase in the number of cases will furnish the data to answer that question. Nor again will they help us to explain why two or more children in a family may show no signs of infection, while others are born with distinct evidences of it. Such questions as those we ought surely to be able to answer if we set ourselves to the task in a reasonable and scientific spirit, and pursue it with energy, patience, and perseverance. It is sad to look back to the grievous errors which have been promulgated by men of the highest ability, some instances of which I shall have occasion to refer to. We can, however, defer for the present any further remarks of this nature, and turn our attention to the clinical study of the subject.

At the conclusion of the last lecture, a case of infantile syphilis in a child six months old was brought to your notice, of which we were able to obtain a part of the history. In the interval between then and now I have obtained the other part—the most important in many respects—the history given by the father. The mother, you remember, gave a

distinct account of her married life. She told us that she was the second wife, and that her health had been good at all times. At present she is feeling weak from anxiety, and care of the infant; but she has had no symptoms which after proper inquiry could be attributed to syphilitic infection. We then had the account of her children. The first was born dead at term; the second was born dead at the eighth month; the third was born dead at the seventh month; the fourth was born dead at the seventh month; the fifth and sixth were twins, born dead at the seventh month; the seventh is now two years old, and has ailed nothing since birth. The eighth is the infant we have just seen to-day for the second time. The symptoms of syphilis are well marked; the hands and feet are peeling; the parts around the mouth, nose, and ears are slightly ulcerated; the nates are sore; the skin is pale and waxy; and the child had snuffled since it was a fortnight old. It is not at all ill-nourished, and the most marked symptoms are the general cachectic appearance and the waxiness of the skin. You noticed also a considerable amount of swelling and redness around the right elbow-joint; and the right leg was swollen, rather red and shining, a condition which you would pronounce to be erysipelas. There is an abscess in process of formation in the right arm, and I think already there is deep-seated pus. As a rule it is better not to incise in such a case, as there is little or no pain, and the inflammatory action will soon be arrested when the constitutional effects of proper treatment are obtained. I have ordered the mother to give the following medicine: One grain of mercury and chalk every night; one grain of iodide of potassium, twenty minims of syrup of iodide of iron, water to one drachm; to be taken three times a day. The prognosis of the case is very favourable, and some day I shall bring the child under your notice again, and give you an account of the results of treatment. We will now take the history given by the

father. He is fifty-one years of age. When between twenty-one and twenty-two he was infected, and was under treatment for two years; so that about thirty years have elapsed since that time. He was twice salivated during the two years immediately following infection, and when he married his first wife eight years had passed. He was then in good health, and has enjoyed good health since, with the exception that he is subject to attacks of asthma. By his first marriage he had four children. The first was born prematurely and dead; the second has grown up and is now a strong and healthy youth, seventeen years of age, who has never shown any symptoms of hereditary syphilis; the third was born prematurely and dead; and the same accident happened to the fourth. The first wife enjoyed good health and died from an acute illness in no way related to syphilis. After remaining a widower for three years he married a second time, nearly twenty years after being first infected. This history is given by a man of rather superior education and intelligence, and from the first there has been a sensible desire on his part to avail himself of the best professional advice within his means. It was his own wish that he should be fully subjected to the influence of mercury, with a result not frequently observed in similar cases.

I need hardly point out to you what are the questions of chief interest in a case like this. As far as the infant itself is concerned there is nothing to be remarked. Its condition is a common one; and the treatment is simple enough. It is not by any means the most common form of infantile syphilis, but its symptoms were such as at once to make the diagnosis and prognosis certain. It differs in this respect from the most common form of syphilis in the infant: that the child is well nourished and well developed, and the most striking symptoms are the pallor and waxiness of the skin. There is no wasting and no extensive cutaneous ulceration. The cracks round the lips are not deep. The chief troubles

are the swellings of the arm and leg. Taking all the symptoms together, you would if you saw them in an adult expect to hear that a considerable interval of time had passed since infection, and that they belonged to what is usually known as the tertiary class of symptoms. As regards the mother there is nothing whatever to be said. It is of no use discussing the question whether she has been infected or not. There is one thing certain. It is that she may one day show signs of infection, and if she does they will be symptoms of what we call a tertiary character. Note 6 in Fournier's work is a case of this kind. No. 33 in my list is also a case. These are facts which we cannot explain at present, but we shall probably find out the solution by inquiring in each such case into the history of the father. This at least appears to me to be a line of investigation worth attention. It will be convenient, I think, if I make some remarks upon the list of cases I have drawn up in a tabular form of instances of family syphilis, as I shall have occasion to refer to them from time to time. The symbols S_1 and S_2 express, as I have already explained, the nature or mode of infection to which the mother had been subjected. When she suffered from symptoms of primary infection, and had contracted syphilis directly from her husband, I use the symbol S_1 to distinguish such occurrence from that where the mother was infected through the fœtus, and which is symbolised by S_2. Therefore, in looking down the column containing the symbols S_1 and S_2 you can determine at once the form of infection in any particular case or number of cases. In column A the period of time is given which has intervened between the date of the infection of the father and the time of marriage. The object of this is to show to what extent it is probable that time exerts an influence in determining the evolution of specific symptoms in the mother or children, or in both. In column B a question of time is also answ rent from that in column A, and not so important i ects, but

still very necessary to the history of the family. This column gives the period which has elapsed since marriage, and enables us to some extent to compare the conditions observed when the case first came under notice with those reported by the mother or father at earlier periods of their history. I have then arranged in three separate columns the condensed history of father, mother, and offspring. Most of these histories have been taken at considerable length, and most of the details, whether positive or negative, of any importance have been noted. This table might be improved, but only at the risk of increasing its size inconveniently.

Now, in taking notes of the case we have been considering, you perceive that there are some details especially deserving of attention. The most important fact in regard to the father is not, in my opinion, the long period that elapsed between the time that he was infected and his first and second marriages, nor the fact that he was treated so actively as to have been twice salivated, but it is that he has been the subject of asthma for many years. If this had been omitted the case would have been incomplete, and for the reason that the constitutional tendencies of the individual appear to determine to a great extent the character of the symptoms which generally follow infection, and this, too, quite as much as, if not more than, the simple influence of time. Do not suppose that I have any theory upon this point. I simply state the results of what probably many have observed and are well acquainted with. The importance of noticing this fact we shall have occasion to refer to again.

The cases to which most attention should be directed in our present state of knowledge are not such cases as this, nor are they such cases as those mentioned by Fournier, where both mother and infant escaped; nor are they such cases as the 237 of primary infection in the mother mentioned by the same author. The cases of greatest interest now are those where the mother has been infected through the fœtus, and

has shown symptoms of such infection; and in taking notes of these cases we must be particularly careful to have a complete history of the father. To refer again to Case 33 in my list. The fact was stated that the father was under treatment at King's College Hospital at the time that the child was brought to us here; and my friend, Mr. Royes Bell, assisted me by his notes of the father's history. I should have no difficulty in proving to you that you will find some such evidence of active symptoms in the father when the mother, through conception, becomes infected. What the relations may prove to be we will at present defer to consider. My object now is merely to explain the necessity of these details if we are to work out the questions of interest and importance connected with this subject.

We will take another case of family syphilis, of which we obtained a partial history last week, and of which I now give you the complete history. Two children were brought by the mother, the elder between four and five years of age, the younger only three months old. The infant presents the common symptoms of infantile syphilis. I mean by the common symptoms those observed in the majority of cases, and which are diagnosed without doubt or difficulty. The skin around the mouth and nose is slightly fissured and ulcerated; the child has snuffled since soon after birth, and the nates are sore, with small superficial ulcers and general redness, tending to a tinge of brown, in the parts around the ulcers. The elder child is between four and five years old; she is delicate and suffering from bronchitis; but, so far as any history of specific symptoms are concerned, we are informed that they have been quite absent. The mother gives the following account of herself. She has always been delicate, and has a tendency to bronchitis. [illegible]r marriage she had local symptoms of infection, [illegible] throat, general weakness, &c. She gradually rec[illegible] terly she had goo[illegible] when not suffering [illegible] Of her

children, the first was born dead; the second the same: the third was born alive, and died at the age of eight months; the fourth lived to the age of nine months, and suffered like the infant we have just seen; the fifth is alive, but has also suffered; the sixth is the elder of the two children brought here; the last is the infant. In the course of the week I saw the father and obtained from him his history. He is thirty-five years of age, and has been married ten years. Four months before marriage he was infected, and was under treatment, with the result that at the time he married the local symptoms had ceased, and there were no "secondaries." Very soon—that is, a few weeks after marriage—local symptoms returned, and his wife was infected, with the result we have seen. He submitted himself to treatment, and soon recovered, and has been well since. You will probably say at once that this was a case of S_1. It is entered in my list as No. 35. Compare it with No. 36 and with some few other cases. It has appeared to me doubtful whether in married women local sores are always cases of primary infection. At least, they differ generally from the common form which the disease assumes in hospitals specially intended for this malady. In the cases I refer to there is no distinct history of a primary sore. Conception takes place, and soon after—that is, within a few weeks or months—the skin, the throat, and other tissues are affected in a similar way, as far as can be judged, to that which is characteristic of the ordinary symptoms termed "secondary," when following on a primary sore. It seems, if we may take the list of the cases I have tabulated, that the most common occurrence in married women is a history of freedom from all symptoms; the next most common is one of what are generally known as tertiary symptoms; and the least common are the cases of active secondaries. I have already said that a case of primary infection is very rare as the direct result of marriage, for the reasons given that men do not contract marriage when suffering from local sores.

I think you will see that I am arguing in favour of the view that in the condition of the father we must seek for an explanation of the varying symptoms which are presented by the mother and the children.

It is proper that I should state the conclusions which clinical observation seems to me to support in regard to infection or inoculation with the syphilitic virus.

There is strong evidence in favour of the view that the syphilitic poison varies in intensity, or at least that it varies very greatly indeed in respect to the series of phenomena which follow its introduction into the healthy system. We are not dealing, in my opinion, with one definite aspect of character and potentiality. Whether this view be consistent or not with other infective processes is not to the point, for reasoning by analogy in this case is unscientific and dangerous. It might, however, be very fairly asked whether there are not good and sufficient reasons for thinking that all infective agents are capable of modification. Every case of syphilis that we see here is practically an experiment, or rather it is the result of an experiment, followed by certain phenomena, and considering the variety of these phenomena we must look to the conditions of the experiment for an explanation of them.

LECTURE XIII.

Syphilis in the Infant.

I explained the reasons for, and illustrated the proper method of studying infantile syphilis to some extent, and, pretty fully in the two last lectures, and I propose to-day to consider the subject in a very simple and practical way, excluding historical allusions or criticisms on the errors of past times, and assuming the accuracy of the views stated in the lectures referred to.

We have had five cases of infantile syphilis under observation this morning; some have been under treatment for two or three weeks, and some came for the first time to-day. You may have noticed that in taking notes of these cases a definite plan was followed which enables us to arrange the details in a simple tabular form.

First, I noted the age of the infant; the nature of the symptoms shown by the morbid conditions of the skin, the mucous membrane, the bones, and other parts: the date of the first appearance of symptoms, that is, how soon after birth; the nature of nourishment, that is, whether by the breast or by hand food; whether any treatment had already been adopted, and of what kind; and lastly, if there were any other facts directly bearing upon the condition of the infant, they were added. The next facts noted related to the mother —her age; how long she had been married; if any, how many children she had had, or rather the number of preg-

nancies, and what was the result of each in order of time; then the state of her health previous and subsequent to marriage and at the present time; and of course a special note if she had been married more than once, with details of that part of her life.

The next step we took was to request her to tell her husband that we should like to see him some day soon, and after making a convenient arrangement for his doing so, or obtaining the name and address of the practitioner who generally attended the family, we dismissed the mother and child, giving proper directions for treatment. A week generally intervenes between one visit and the next, and in the interval we do our best to ascertain a third group of facts relating to the history of the father of the family.

I am anxious that you should understand clearly the object of all this trouble, because I have found that when I have written to practitioners in order to obtain the history of the family from them, that is more particularly the history of the father, I have seldom succeeded in gaining the information I sought. Not seeing the reasons for this inquiry, or sometimes, though not often, because a spirit of indolence and indifference is generated by ignorance, those to whom I wrote failed to assist. It was far more easy for them in their relations to the family to do what was difficult for us at a special hospital like this.

The history of the father was taken like that of the mother; his age; how long married; when he was infected, and under whose treatment at the time; what symptoms followed infection, and the present state of health; the exact time which intervened between infection and marriage; and any facts relating to his habits, hereditary tendencies to disease, if any existed, or any other facts which suggested themselves as important. As in the case of the mother, if he had been twice married the history of this part of his life was noted.

Now I have one observation to make which deserves your attention. It might be imagined that the details above enumerated could not be obtained without grave difficulties, or at least without risk of causing family troubles. This has never been the case in a single instance which has come within my own experience. Truly, trouble might have been caused if I had not used some tact and good feeling; but if any one of you at any future time excuses himself on these grounds from studying every case that comes before him in the way I have indicated, if only for the sake of improving his probably very limited knowledge of this very obscure subject, infantile syphilis, I hope that his conscience will reprove him for neglect of opportunity, if not for indolence and want of interest in the improvement of our science. I am not speaking as seriously as I feel on this matter, and if I had not promised to make no criticisms on the errors of the past you would see what good reasons we have for trying our best to repair them by every effort we can make.

Now in one respect, and that a very important one, I am obliged to admit that a knowledge of the whole history of a case of infantile syphilis is usually of very little value, and that is in the matter of treatment.

If the symptoms are quite clear, and they generally are so, your treatment is a matter of simple routine. Instead, therefore, of reserving remarks on treatment till the end of this lecture, I will tell you briefly what that routine practice is.

One grain of grey powder once in the twenty-four hours is the first item prescribed, and this quantity is as proper for an infant of only a few days old as for one of twelve months. For about a fortnight it may be continued, and then, if the symptoms have clearly begun to improve, as is generally the case, the quantity may be reduced or the powder given every other night.

The next item is some preparation of mercury for local

use—that is, for the treatment of cutaneous troubles, such as the ulcers so common on the nates, or the fissures round the nose and mouth. Grey powder mixed with sweet oil to consistence of thick cream is ordered to be applied with a soft brush night and morning, after bathing with warm water; or a mixture of calomel and oxide of zinc in equal parts, similarly combined with sweet oil, or dusted on dry; or if there be much erythema and irritation of the skin, as well as ulceration, a mixture of calomel and starch should be used in the proportion of one to two. The chief point to attend to—and these details make a great difference in results—is the avoidance of thick ointments or preparations which have to be spread on linen or applied directly with the fingers. The infant is irritated and pained by this plan of dressing the sore parts, as well as by the rough washing which is used to clean away the ointment. It is a rule in the treatment of all cutaneous diseases in children to forbid the mother or nurse to touch the skin with her fingers.

The two chief points—the constitutional and local treatment—being thus provided for, only one remains—namely, the treatment of the cachexia, by proper food and the administration of some of the preparations of iron. The most nourishing food should be ordered, and small doses of the syrup of the iodide of iron, combined with half-grain or grain doses of the iodide of potassium may be given two or three times daily.

If I refrain from attending to any other plans of treatment than that I have now given you, it is because I have satisfied myself that they do not yield equally satisfactory results.

If you find that at the end of a fortnight the child shows no signs of improvement, the prognosis is generally unfavourable. A certain number of cases do not improve whatever the treatment, and it is well to give a cautious prognosis until the time I have mentioned has elapsed. Considering how

frequently infants are born dead, either prematurely or at term, we need not be surprised that a certain number do not long survive their birth.

It may occur to you to advise that the child should be suckled, so that by treating the mother actively with appropriate remedies, and particularly with iodide of potassium, the child might gain, not simply by the fact of its being suckled, but by the transmitted effects of the remedies administered to the mother. On this point I have made careful observations, which prove that such a hope is delusive, and that it is better to order the child to be weaned, and to treat it directly in the way I have indicated.

Let us now return to the clinical phenomena of infantile syphilis. You have seen some this morning. In one case the symptoms were of the commonest character—cachectic pallor, cracks round the nose and mouth, nasal catarrh and obstruction, and ulcers on the nates. In another case the skin was erythematous, with slight coppery tinge over the legs and thighs, and the feet were scaling. The snuffling and cachexia were well marked.

In a third case there was only one well-marked sign of infection, a condyloma of considerable size close to the anal orifice.

In the fourth case there were all the symptoms which were present in the first case, but there was a peculiar condition of the skin to which I drew your attention particularly, because it is by no means one that we meet with often. There were numerous subcutaneous globular swellings, of the size of a pea, some larger, some smaller, to which the term gummata might perhaps be given. Those which were large raised the skin above them so as to cause it to appear as if a small boil were forming, but instead of being red and inflamed the skin had a dark bluish tinge. In some respects they resemble boils, for they soften and sometimes break and discharge thick yellow matter, But they are not painful, and

can be touched or pressed without apparently distressing the child. I generally use the term "specific furuncle" to designate this form of cutaneous disease when taking notes of a case in which it is present. The treatment prescribed in these four cases was the same.

Two other cases will occupy us during the rest of this lecture. We will study the four cases on another occasion. Now this fifth case was a doubtful one. From this very fact it was to me the most interesting of the five cases, because when we saw it for the first time last week some of you felt almost, if not quite, certain that it was a case of infantile syphilis. You formed your opinion from the condition of the child. There was wasting, cachexia, snuffling, and erythema, with ulceration of the nates. If you remember, I admitted that you had good reasons for your opinion; at the same time I differed to the extent that I expressed the belief that this would turn out not to be a case of syphilis. The mother was the wife of a coachman; she gave no history of specific infection. She had six children alive and well, had lost one from whooping-cough, and with the exception of having suffered a good deal of anxiety and privation during the last pregnancy, owing to her husband having been out of work, there was nothing very noteworthy in her history, She certainly had prolonged labour with this child, and recovered more slowly than on former similar occasions. The case illustrated the difficulty, I would say rather the impossibility, sometimes, of deciding from symptoms alone whether the case is one of specific nature or not. Since last week I have seen the father, and have been satisfied that the cause of the child's condition was entirely explicable by the low state of bodily and mental health in which the mother was previous to, and at the time of, her confinement. The importance of care in diagnosis is clearly seen in such a case as this, for if we had prescribed the ordinary mercurial treatment for this child the resu lt would have been most unsatisfactory

But I will give you another example of a somewhat curious instance of doubtful diagnosis, which came under my notice a few weeks ago.

I was asked to see an infant, æt. one month, under the following circumstances:—The parents had been married seven years. During the first year of their married life a child was born prematurely at the seventh month, which lived only a few hours. The mother recovered slowly, and had suffered from uterine congestion, more or less, since. The next pregnancy was the last, during which she was in better health than usual, and she was confined of the child I was to see without difficulty or mishap. A few days, however, before this she had some obscure febrile attack, and a few days after confinement she had an eruption of spots of ecthyma, painful and irritable, on various parts of the body, but chiefly on the legs, which were still inflamed and ulcerated. She had the idea that she had inhaled sewer-gas while out walking a few days before she was confined, but nothing definite could be made of the nature of this illness. The child weighed 8½ lbs. at birth, and was apparently healthy, but a few days afterwards it had difficulty in swallowing food, some obstruction in the nose, and an eruption on the arms and legs of general erythematous character. The skin of the nates soon became red and ulcerated. When I saw the child it weighed exactly the same as at birth. The legs and feet were erythematous, and the skin on the dorsal surface of the feet was peeling off. The hands and arms had been in the same state, but had recovered. The nates were red and ulcerated, almost exactly as in the fourth case above mentioned. The difficulty of deglutition was very great, and respiration was impossible when the bottle was used for feeding. The mother lost her milk, or rather she had none, and the infant was fed with a spoon. If more than a few drops were poured into the mouth, the infant was seized with spasm of the pharynx, and the food was returned

through the nostrils. The medical adviser of the family had expressed a distinct opinion that the case was one of infantile syphilis. This was agreed in by another practitioner, and the child was taken for a consultation at the request of the father to one of high authority in such matters.

Now another element of doubt was introduced into this case by the following circumstance. The monthly nurse who attended the mother came straight from nursing an infant which was the subject of extensive dermatitis of the common form, and this case had been under my care some weeks previously. The question was submitted to me before I saw the mother and infant to whom this nurse had last come, whether she could possibly have brought any kind of infection, and thus produced the symptoms from which they were suffering. I inquired of the father whether his wife had been informed of the opinion expressed by their medical adviser, and agreed in by the consultant, that this case was syphilitic. He said that his wife did know it, and was strongly disposed to believe it. He himself not admitting the charge involved in this opinion, still believed that the medical view must be correct, and that the nurse was the cause of the trouble.

When I saw the child and examined the condition of the throat, I found that the soft palate, the uvula, and pharynx were extensively inflamed and swollen. The surface was of dark-red colour, but there was no ulceration. The difficulty of swallowing was easily understood, and seemed to be the chief cause of the wasted condition of the infant. I questioned the father closely as to the possibility of his having been infected with syphilis at any time previous or subsequent to his marriage. It was not because he distinctly denied such possibility that I formed the opinion that the case was not one of syphilitic infection. It was because I recognised in it one of those rare instances of conditions simulating in many respects a certain form of infantile

syphilis. He naturally inquired at once, how, then, do you explain the symptoms? I informed him that cases of similar nature had passed under my notice where similar difficulties of diagnosis had arisen, and where it was impossible, without a knowledge of the condition of the mother about the time of her confinement, to account for the symptoms. In his own instance, this part of the case had not been laid before the consultant to whom the infant was taken, and the mother was not seen by him. The child had, when I saw it, been treated actively with mercury without improvement. The quantity of food it took in the twenty-four hours amounted to two teaspoonfuls of condensed milk mixed with sixteen times the quantity of water. How much of this it swallowed it was impossible to say, but judging from what I saw when the food was given, and that more than half returned through the nostrils, I came to the conclusion that the infant had lived upon less than a teaspoonful of condensed milk in the twenty-four hours, which would, of course, account for the wasting.

The symptoms in this child I attributed to the infection of the mother by some septic agent, or by some other cause of constitutional derangement, which had produced the acute ecthyma from which she was suffering. The case was obscure, it is true, but there was no justification for the decided opinion expressed that the symptoms were due to syphilis, and for thus producing a serious disturbance in the relations of the husband and wife to one another.

I have given you the details of this case in order to impress upon you the importance of studying the subject of infantile syphilis in the way I have indicated, and although I stated that for purposes of treatment, where the diagnosis is certain, the history of a case may not be essential, yet no one is justified in an over-confident opinion where there is the least doubt without a thorough investigation into all the

details which may assist—some in a remarkable way—in clearing up the difficulties presented in this class of cases.

I have already drawn your attention to the fact that the health of the infant is singularly influenced by the condition of the mother at the time of its birth; and that no tissues of the infant exhibit morbid conditions more strikingly, or are more frequently affected, than those of the skin, when the mother's health has been disturbed by causes similar to those mentioned in the two last cases we have been considering.

LECTURE XIV.

Malformations of the Heart.

Cases of congenital heart disease in infants and children are generally of great interest—perhaps because they are not very common, or because exact diagnosis is difficult. At one time this difficulty of diagnosis aroused an interest in my own mind; but time, observation, and reflection have altered my views, and presently I will explain to you as briefly as possible the reason why. We will begin, as usual, with a case, a typical one, of congenital malformation of the heart, and of rather common occurrence. The boy is now in fairly good health. According to the mother's account he has never been so well. He is between five and six years of age, is well grown and well nourished, and there is no complaint made of disturbed health except a slight cough. We have had him under observation for several months, and his mother says that he was brought to this hospital between three and four years ago, when he was about eighteen months old. We are told that he had three convulsive attacks at one time, but there does not seem to have been any reason for suspecting disease of the heart—at least, no intimation of this was given to the mother. When he came the second time, some six months ago, there was then nothing very definite in the symptoms. He suffered chiefly from a disinclination for exercise or movement, from occasional swelling of the joints of the knees, feet, and hands; and he had spots of rather bluish ecthyma on different parts of the body. It was the

fact of these symptoms being indefinite, and perhaps more particularly a peculiar expression of anxiety in the face, that made us at once suspect some cardiac trouble.

If you examine the boy's heart, you will find very much the same signs to-day as when he was examined a few months ago. You can hear a loud prolonged murmur over the præcordial region, but loudest a little below and to the left of the nipple ; and you can follow the murmur round the axilla to the angle of the left scapula, where it is much fainter than in front, but still very distinct ; it is systolic, but more prolonged than the ordinary mitral murmur of rheumatic origin. The liver was enlarged, for its margin could be felt midway between the umbilicus and the right costal boundary line. The treatment was active and satisfactory. We relieved the circulation by leeches applied over the heart, encouraging the hæmorrhage by fomentations. We ordered full doses of digatilis, combined with the mixture of iron and magnesia ; and, lastly, we enjoined perfect repose. As you see, the impulse of the heart is considerable, but the contractions are regular, and not very rapid, not more than 80 in the minute, and less probably if the boy were not a little excited. The clubbed condition of the fingers which was noted some months ago has disappeared, the skin is quite healthy, and there is no swelling of the joints ; in fact, there is nothing particular to observe in the case except the cardiac murmur and some coarse crepitation in the lungs, due probably to a recent mild attack of bronchitis, or to slight congestion from the condition of the heart.

The case is not complete without an inquiry into the possible origin of the malformation. The first symptom of serious disturbance of the child's health was when he was ten months old, and then his breathing was at times oppressed and there were other symptoms, although not at the time understood, yet clearly sufficient to decide the question of the congenital character of the cardiac defect. Two possible

causes are given by the mother. One is that three weeks previous to the birth of the child she had a serious fright from a fire breaking out immediately behind the house in which she was living. Her anxiety was increased from the fact that her husband kept an oil-shop, and there was imminent danger of a conflagration on their own premises. The child was born rather prematurely, in consequence it was thought, of this accident. The other cause is somewhat different. The father was the subject of severe rheumatism, and though we cannot ascertain distinctly the cause of his death, yet we are told that it happened rather suddenly eight months after the birth of this child. The relation between the father and the boy's condition is simply this—that if the former were the subject of disease of the heart of rheumatic nature at the time of conception, we know by experience that this may be the cause of cardiac malformation of the offspring. Which of these two cases was the potent one in this case I am not prepared to say. It is true that the most common cause of this kind of malformation is maternal trouble; but in giving you the complete history of all the facts, I have indicated a possibility worthy of attention and recollection. There is one point to be noticed before we discuss the nature of the cardiac defect, and that is the convulsive attacks which occurred at the age of eighteen months. They were not ordinary convulsions such as we are familiar with in infancy. They were rather long attacks of passive coma, without muscular spasm, and were alone sufficient to suggest some cardiac trouble. I have already pointed out, when considering the subject of convulsions in infancy, that this form of so-called convulsions presents a striking contrast with the form we are most familiar with. I think that the importance of carefully examining the heart in infants when the convulsive attacks are of comatose character was then mentioned to you.

Now we will consider what is the probable condition of the heart. Though we may not be able to diagnose for certain the exact nature of the malformation, we can arrive at conclusions exact enough for all practical purposes. In this case I think we may conclude that the defect is situated in the ventricular chambers, and that in all probability it consists of a communication between them somewhere in the interventricular septum. This is not an uncommon form of malformation. As you might imagine, the most common form is a communication between the auricles from non-closure of the foramen ovale. The auricles thus become practically one chamber, and we judge of the extent to which they are partially divided by the general condition of cyanosis. But if you expect to find a murmur present in most cardiac malformations you will perceive on reflection that this is unreasonable. In the majority of cases the chief physical sign is rapid and increased action of the heart, and not what we have observed in the case before us. It is for this reason that we must attend more to the general evidence of disturbance of the circulation than to the stethoscopic examination, and even when there is a distinct cardiac murmur we must look rather to the former than the latter in giving a prognosis. If we take a general view of this question, we shall see that it resolves itself into an hydrostatic problem, where the points we have to determine in any particular case is not so much the locality where the two blood currents, the arterial and pulmonary are confluent, but rather the extent to which confluence is permitted by defects in the chambers or vessels which contain the fluids.

Imagine that we have two tubes of equal size placed parallel to one another, and that water or any other fluid is flowing through them in a similar direction, and at the same pressure. If we open a communication between these tubes by a cross tube interposed at right angles, no effect is practically produced upon either current; but if the cross tube is

inclined at an angle between them, there is a tendency for a current to be established along the interposing tube. You can easily perceive that the size and the direction of a communication between two currents determine to some extent how far one mingles with the other. In a closed circuit the conditions are somewhat different, and we have to consider the difference of pressure on either side of a communication between the two systems.

In the case before us, for example, there is probably a current from the left ventricle into the right during each contraction, with little if any current in the opposite direction; at least if there is it must be during the diastole. I think that if the right side of the heart were much congested, and the fluid pressure were increased, there would be more trouble, and cyanotic symptoms would exist as at the time when the leeches were applied. We will not consider this subject any further now, as you can pursue it at your leisure without my assistance. It only remains for me to say a few words on a line of research which I have no doubt has occurred to you as likely to aid in diagnosis—namely, the examination of the numerous specimens exhibited in most museums, or the descriptions to be obtained from various sources of different kinds of malformation. It is rather curious to find that a good many of the specimens in museums were accidentally discovered, and prove chiefly that persons may live without suspicion of anything being wrong with the heart for many years. In other respects these specimens from having no history attached to them are not of much value.

A classification may be made from such a collection of specimens, and certain general conclusions may be drawn, but when this is done you are not much assisted in the diagnosis of any particular case. There is one thing certain, after all, and that is that general symptoms may be relied upon rather than physical signs in deciding the probabilities of life being supported under the circumstances. A large

number of cases soon terminate fatally, and by soon I mean within a few weeks or months from birth. It often happens that, provided the greatest care is taken of an infant, it exists until an accidental exposure to cold induces some complication such as bronchitis or pneumonia, or it becomes the subject of convulsive attacks, which soon prove fatal. In many cases the distress of the infant is very painful to see, and we need not hesitate when expressing faint hopes of life to point out how little its prolongation is to be desired where the suffering is so great. Among those who have made the subject of malformations one of special study, and to whom we are much indebted for carefully described examples, as well as important generalisations, I must not omit to mention the name of the late Dr. Peacock. It is associated in my mind with such estimable qualities of intellectual and moral character that I mention it with deep respect and affection, and when I recommend to your attention the writings of this distinguished physician and pathologist, I do so in the conviction that you will derive great satisfaction and profit from the perusal of his works. In the Transactions of the Pathological Society some of his most important contributions will be found. In vol. xxxii., p. 35, there is a brief but valuable summary of what he described as "the most common kind of deviation from the natural conformation of the heart," the cases where the aorta communicates with both ventricles through deficiency of their system.

Seeing that we must be guided much more by the general symptoms in our diagnosis and prognosis than by physical signs in this class of cases, you will appreciate my reasons I hope for attaching more importance to the former than the latter; and though it is not my wish to discourage you from carefully determining physical signs, it is proper that you should not attach too much importance to them, or hope for as much assistance in diagnosis as we are accustomed to derive when dealing with other forms of cardiac disease.

LECTURE XV.

On Movements of the Eyes and their Relation to Disorders of the Brain in Children.

The eyes in infants and young children may be affected by various kinds of movements which usually indicate certain conditions of cerebral disturbance. The great sensitiveness of the nervous system in early life finds expression in some form of muscular spasm, but no part of the muscular system is more sensitive than that connected with the eye-balls, and their orbits. This is probably true of all periods of life, and is one of the chief reasons why the eye plays such an important part in expressing the mental processes in action in the individual.

We propose to consider to-day those movements to which the term nystagmus is applied, and we must notice first that this term is too indefinite for clinical purposes, unless we describe its character with some additional term of exactness.

The eye may move in every direction, from side to side, vertically, or round its antero-posterior axis. We thus have lateral, vertical, and rotatory nystagmus, as three distinct kinds of movement. We may have only one, or we may have them all present in the same case. In the infant before us we perceive that not only the eye-balls are affected with vertical nystagmus, but also the head itself; and the m
ments of the head are chiefly of the same character a

of the eyes. The infant's age is between nine and ten months. She was brought here five weeks ago, and three weeks previously she had a convulsive attack, or rather she woke in the middle of the night with a scream, and then had a slight convulsion, which was followed by many hours of screaming. After this for about a week she was quiet, when, to use the mother's expression, she began "to work her head," and the eyes began to move. The mother has remarked the following peculiarity: that when she lets the infant lie back, and rest its head upon her knee, the eyes move much more actively than when the infant sits up, but the nodding action of the head ceases, You may notice that this is true, and further, that occasionally the head has a rotatory motion, a lateral nystagmus. There is no inclination of the head to the shoulders, and all movement appears to take place between the atlas and the occipital bone.

There has been no return of the convulsions since the first attack. The nystagmus of both head and eyes has varied in degree, on some days being much less than others. The infant is well nourished, and though she is at times restless and cries at night, she is usually as you see her now, in good spirits, and inclined to notice everything around her. No particular cause is assigned for the convulsion. It is possible that it may have been connected with the cutting of the first lower incisor which preceded the attack by a few days. It is also possible that it may have been due to some inflammation of the internal ear, for the mother noticed that the child appeared to suffer with its left ear, as it was constantly raising the hand and rubbing that part as though in pain. It ought always to be remembered that this is by no means an unfrequent cause of convulsions in infants, as is often proved some few days later by a discharge from the ear. This, however, was not the case in the present instance. I think that I have explained to you the conditions of the mouth and throat, which apparently has a tendency to extend

through the Eustachian tube to the inner ear, and is the cause of otitis.

It cannot be said that the child has improved much since we first saw it. It has been taking small doses of bromide of potassium and belladonna, and the general treatment has been such as is usual after an attack of convulsions, when the symptoms of a probable recurrence are present.

Now, before passing to the next case, one of lateral nystagmus and hydrocephalus, let me refer briefly to those authorities which you may consult with advantage on this subject. First there is an excellent treatise by Dr. A. Gadaud ("Etude sur le Nystagme," Paris, 1869), who quotes from a contribution by Odier, published in 1779, in the "Hist. Roy. Soc. Med.," and from an essay by Brachet, "Sur L'hydrocephalite ou Hydropisie" (1818), to prove that nystagmus is due to effusion into the cerebral ventricles. The chief result of Gadaud's personal observations was the distinction between symptomatic and idiopathic nystagmus. In the treatise by Boehm ("Der Nystag und dessen Heilung," Berlin, 1857), the view is supported that nystagmus is muscular, like strabismus. Nakowz compared it to chorea; Von Carion attributed it to "refraction;" Kugel to retinal defects; and Javal to astigmatism. Each author is inclined to attribute too much to one cause. It is enough for us to admit the possibility of many causes, and our object is to study how to distinguish the one which is present in any particular case.

I must not omit to mention the observations of Dr. Ogleby on the "Nystagmus of Miners" (Transactions of the Ophthalmological Society, vol. ii). In their case it appears that the movements of the eyes are vertical; that they occur when the head is held in a certain position; and that they frequently cease when the head is held erect. The inference which Dr. Ogleby draws is a reasonable one, that

miners' nystagmus is due to the varying circulation in the diseased cells of the medulla : or, at least, that it is to be attributed to central congestion, and in no way to hypermetropia.

Now we will examine another case, one of well-marked hydrocephalus, with lateral nystagmus. The child is aged two years and a half. She has been under my observation for fifteen months, and has improved much, both mentally and physically, that is to say she has grown well, and the head has not increased in size. She had an attack of convulsions when three weeks old, and the nystagmus began a few days after. There has been no fit since as severe as the first, but she had frequent slight attacks of eclampsia, without loss of consciousness. In the intervals the nystagmus has sometimes entirely subsided, but after each attack it has been always more decidedly marked. The head is twenty-three inches in circumference and presents the common characters of not very advanced hydrocephalus. The eyes, as you see them now, are constantly moving left and right, that is they are affected with lateral nystagmus. The movement is regular, there is no twitching of the eyeballs, and in extent it is equal in both directions. We conclude from this that the nervous centres are equally affected in both hemispheres.

It often happens that the nystagmus is not a simple regular oscillation of the eyeballs as in this case, but the eyes move by a series of jerks to one side, and then it appears as if a partly conscious effort were made by the child to bring the eyes back to the direction in which it desires to look. For a second or more it can retain this position, till the muscular twitching again draws the eyes away. Clinically, therefore, we have a symptom of considerable interest in nystagmus, and when I said that we must define its character by some additional terms, it was with the object of determining the relation between the central disturbances and their effects on the eyeballs.

Nystagmus is not always present in hydrocephalus, and therefore we cannot suppose that it is caused by effusion. We really cannot say what the cause of it may be, but we can judge of the progress of a case by the variation of the nystagmus, for it will be found, I think, that when it continues after a fall, a fit, or some such accident for a length of time that is for weeks or months, the prognosis is unfavourable.

Its association with squint is deserving of attention, for it suggests that they are due to similar central lesions. If the right eye has internal strabismus there are reasons for concluding that the left side of the brain is affected, and when the left eye is affected the lesion is probably in the right hemisphere. We may further remark that although strabismus and nystagmus are associated, there is probably more resemblance from a pathological point of view, between infantile paralysis and strabismus than between the latter and nystagmus, which may be compared with convulsions. This leads us to ask the question whether internal squint is due to paralysis of external, or spasm of internal, muscles. It is an important question, as I will explain on some future occasion.

LECTURE XVI.

The Deaf and Dumb—Defects in Speech.

You will very probably be required in the course of professional life to decide the question whether a child is deaf and dumb. An easy matter you might imagine—at least in most cases. And so it is; but not in such cases as are brought to this hospital. A very interesting example of this difficulty is before you. A father has brought his son, aged between seven and eight years, with a letter from an esteemed friend, once my clinical assistant here, and now in large practice in this neighbourhood. He asks us to decide whether this boy is deaf and dumb. Let us give some care and attention to the case, for I have ascertained that there are good reasons for the question being carefully considered. The school where the boy has long attended is now under the control of the School Board. A new master has been appointed, who has reported of the boy that he cannot be educated with other boys, and ought to be sent to a school for deaf and dumb children. The father objects because he says the boy is not deaf and dumb, and the distance of this school from his home makes it difficult for him to attend. He therefore sought medical advice of one of the medical officers of the parish, who sends the boy to us to determine the question at issue. The father says his boy is not deaf because he is certain that he can hear and understand what

is said to him ; and he is not dumb, because he can speak a few simple words. He can call his brothers by name, and say two or three words consecutively, bidding them "get away," or using similar brief expressions. But I think that the best proof of the boy's powers is the fact that he has learnt to read at school, and his father says that he can write. Let us give him a pencil, and try what he can do. You see he understands what is said to him, for he has written his name, and very well too, for a boy of his age. We will try him now with a watch. He nods his head to the question whether he can hear the ticking when the watch touches the ear, and he can hear the repeater when the watch is held a few inches away. There is not much doubt but that the father's account of him is correct. We cannot induce him to speak, though at home he does so readily, to the extent stated by the father.

I would direct your attention to the expression of the boy's face. There is a far greater amount of intelligence than we generally see in the deaf and dumb, who nearly always lack the bright look on this boy's countenance. Let us see now whether the history will throw any light upon the origin of the trouble. There are other children in the family all well in mind and body. There is no hereditary tendency to defects of speech or hearing, and there is only one point to which I should attach any importance in the family history. About the seventh month of her pregnancy the mother had a severe mental shock from being taken into the room where a near relative was lying dead. She was so much disturbed by this that it was necessary to send her away from home, and though she was not considered insane, she was greatly excited for some weeks. She had recovered at the time of her confinement, but the child a few days after birth had frequent attacks of convulsions. This is all the history we have, but the details are important in relation to the particular defects

from which the boy is suffering. Cases of defective speech, but without defects of hearing, occasionally, though rarely, come under our notice, and it is very important to distinguish clearly between want of speech as the result of want of hearing, and such a case as this. Does it not seem reasonable to suppose that the central lesion must differ greatly in the two cases? Does it not appear highly probable that the powers of speech and of hearing may be separately and singly affected, and that in a third class of cases both senses may be affected, if not destroyed? You perceive the direction thus given by clinical observation to pathological research, and what an interesting line of research is suggested to those who have the opportunity and ability to follow it out. In testing the hearing of a child we must be careful to send the parent away, or to conduct the examination with certain precautions, for the reason that parents are seldom persuaded that their child is deaf and dumb, and have such subtle means of making themselves understood, combining gesture with speech, that they really believe the child hears, when it learns what they mean by the look and the gesture alone.

I need hardly point out to you that you must exercise much prudence and good feeling in expressing your opinion in such cases. Sometimes, nay, more often than you would imagine, the possibility of a child being deaf and dumb has never occurred to the mind of the parent, and the sudden announcement of such a misfortune should be made with tact and justifiable hesitation. You can understand what is right under the circumstances I refer to, and even when you are certain in your own mind of the child's condition, let the kindliest consideration control you in the way in which you express your opinion. But to be quite certain in one's own mind of the extent of the child's defects is often a great difficulty. In the case before us it is not a question whether the boy is deaf and dumb, or not deaf and dumb, but really to

what extent he is either or both. Great importance attaches to a correct diagnosis, for the question of the boy's education depends upon it, and upon that again the happiness of his whole life.

Some of you may possibly have had experience from personal acquaintance with those who have been deaf and dumb, of how they suffer by their want of power to communicate with their fellow creatures, and of the means by which their sufferings are diminished by the ingenious systems contrived for their education and happiness. There is a singular and melancholy interest aroused in our minds when we are in the society of those afflicted in this way. This feeling, however, soon yields to one of a very different kind when we reflect upon the subject in a practical and scientific spirit.

You are perhaps aware that a new system of educating the deaf and dumb has been introduced into this country within the last few years. The old system previously adopted among us was that of educating by signs, and though it is possible by this method to cultivate the mental powers of the individual to a very high degree, yet the disadvantage which accompanies it is a serious one, namely, the isolation of the individual within the limits of the society of those who are similarly afflicted, and use similar modes of expressing their thoughts and wishes. The new method attempts, and often with marvellous results, to develope the power of speech, and at the same time to restore the individual to the general society of his fellow creatures by teaching him to understand their speech by watching the movements of their lips.

Although each system has its warm advocates, and an active rivalry exists between them, a proper appreciation of their several merits requires closer and more impartial examination than has yet been given to the subject.

If we were to recommend that this boy should be sent to a school where the old system of signs is taught we should

act unwisely. It must be quite clear to you that if he is to be taught in a deaf and dumb school he ought to be educated on the oral system. I do not think, however, that he would make more progress than he has hitherto done in his education by any change, and I shall report that in our opinion the boy is not deaf and dumb, and ought not to be sent to a deaf and dumb school.

Now comes the question which seems to me to determine the value of either system in any particular case. It must be clear to you that if the centre of hearing is alone affected, but not that of speech, the possibility of developing the latter as is attempted by the oral system of education is far greater than where the powers of speech are defective.

In this boy's case it certainly seems that he is more dumb than deaf; and his case suggests what pathological considerations would also suggest, and what I think more careful clinical observation will confirm—that we may have these defective conditions relatively reversed. In short, that of one case we may say he is more dumb than deaf, and of another he is more deaf than dumb. If this reasoning be correct, we see some principle on which we can establish the claims of each system of educating the deaf and dumb, and we can fairly and justly support both of them in their most useful and humane attempts to minimise the troubles of those whose mental and moral advancement and happiness they are intended to promote.

Before concluding, and lest, perhaps, I may not have another opportunity of mentioning the subject, let me direct your attention to the various defects of speech, which we meet with, more particularly in childhood. As age advances many of these nervous disorders are outgrown, and when instances are presented to us in adult life our interest is necessarily very slight, on account of the great improbability of any advantage being derived from any kind of treatment.

Stuttering in its various forms is common in childhood and must be regarded, at least in most cases, as one of the varied nervous troubles included in the term chorea. If the pathology of this class of maladies were known to us and thus aided in determining their nature and treatment, I should avoid saying anything regarding the clinical study of them; but in our present state of knowledge I advise you to observe the symptoms with very close attention, and instead of allowing those who suffer to pass, by our neglect, into the hands of comparatively ignorant persons, let us try and establish some firm basis for their rational and scientific treatment.

Here is a girl between eleven and twelve years of age who has almost lost the power of speaking within the last four months. If we ask her to try she twists and turns her head, and strains to speak in a way that would lead you at once to say that she is the subject of chorea. But there is no twitching of the muscles of the face, or hands, or other parts, and there is no indication of chorea till she tries to speak. I think we can detect a languid feeble expression in the face which is common in chorea, particularly in girls at her age, but what the pathology of the disease, may be, is quite a matter of conjecture. You may be certain that the treatment of this condition, if left to uneducated persons, would be the opposite of what is right. Experience teaches us that the uneducated person by some strange fatality, nearly always does what is wrong rather than what is right. By finding fault, by correction, and by other excitement of this girl's nervous system the mischief would be increased. I need not tell you on what principles the treatment ought to be conducted.

You may recollect a case which was here a few weeks ago of considerable interest. A boy, æt. 4½, who could hear perfectly, was apparently well and intelligent, and had

nothing wrong with him, except that he never spoke or expressed himself in any way by sounds. He had not always been so. This condition followed an accident which happened a few months previously when he was run over by a cab and was struck on the left side of the head by the horse's hoof. He was insensible for several hours, and the dumbness followed. He gradually recovered the power of speech without any special treatment. I have said enough to suggest to your minds a line of thought and research which, if difficult to pursue must prove a very interesting one to those who can pursue it.

LECTURE XVII.

Enlarged Glands and Ulceration of the Skin.

In delicate children the glands of the neck may inflame, and abscesses form, leading on to that obstinate ulceration of the skin so seriously disfiguring by the scars it leaves behind it. We know it so well that it needs no minute description. The malady is associated in the popular belief with certain parental antecedents and individual tendencies to which a sensitive and healthy mind has a natural repugnance.

In using the term "delicate" in preference to one of more definite meaning when speaking of children thus affected, intentionally a doubt is implied whether the terms "scrophulous" and "strumous" are fairly used in respect to these children. Those terms are objectionable when used in a popular sense, for then they mean a great deal more than attaches to them in strictly professional language. Many of the children I have seen and treated at this hospital, as well as in private practice, have had no parental antecedents to which their troubles could be attributed, and though there is often evidence of tubercular tendencies in the family history, there is nearly as often none of the kind. Again there was in past times, and I believe there is still, an idea amongst some, that parental antecedents of a syphilitic nature may be the cause of the condition. I may be able to explain presently the reasons for this. It is not easy to alter popular ideas, and we cannot but feel the importance of carefully studying how we can best prevent the destruction of the skin, and promote

the healing of abscesses, so that sufferers may be disfigured as little as possible. Opportunities have occurred to me of keeping watch for several years on cases of this kind, and of learning what are very important points in the matter of treatment—namely, the amount of positive harm which may be done by certain remedies; and the extent to which time, and time alone may be relied upon, under favourable conditions, to aid in improvement.

It is not a question of days or weeks which had to be considered in dealing with these cases. Impatience means harm, and harm not only to the patient but to the physician or surgeon who has the care of the case.

I could give you some striking instances of this and show you how grave is the responsibility which is incurred by us in advising for this particular form of disease.

It is right that I should explain distinctly why I consider this subject as fairly within the province of the physician. It is because constitutional treatment is of the greatest importance in the management of these cases, and that surgical treatment requires to be directed by this and by the most careful considerations of the pathological nature of the disease.

The glands in the neck, like the glands of the mesentery become inflamed in consequence of some morbid conditions of the tissues of the mucous membrane in their near neighbourhood, and the altered conditions which are the earliest stage in the development of an abscess may be usually traced to some affections of the mouth or throat. If a case comes to you before there is distinct evidence that suppuration has taken place, let me advise you to be careful not to hasten the process. Avoid the application of any stimulant to the circulation around the enlarged glands. The usual plan of painting the skin with tincture of iodine is not in my experience attended with any benefit, but rather the contrary. And even when the presence of pus is almost a ce

there is nothing gained by hastening the suppurative process by the application of poultices. That plan of treatment which would be proper in a case where constitutional conditions were favourable to rapid healing, does not answer equally well in this class of children. The treatment of the glands in the early stage of inflammation determines to some extent the subsequent morbid affection of the skin, which, beginning in the margins of the opening through which the pus escaped, gradually extends and persists in its destructive action.

The question of opening a glandular abscess, or of removing the pus by aspiration requires careful consideration. From a comparison of results where this has been done, with those where no such treatment has been adopted, I am satisfied that it is better to avoid any injury of the skin by operation. It seems that when a lancet has been introduced into an abscess the subcutaneous cellular tissue is exposed to the action of the exuding pus to a far greater degree than when the skin has been allowed, very slowly it may be, to grow thinner, and yield of itself to the pressure from below. It is natural, you will say, that as physicians we should attach much importance to constitutional treatment, and equally natural that the surgeon should rely rather on local treatment and surgical methods.

It is not, however, with the question of "medical" as compared with "surgical" that we have to do. In the management of these cases we must be pathologists, that is, we must have studied the true nature and the course of the disease. We must clearly recognise certain constitutional conditions for if we neglect these we must not be surprised to find, that with all care in the details of surgical treatment the results are disastrous in the scars that remain. We are not justified in declining to advise in these cases because from their nature and long duration they are, as some may consider, cases of little interest, and because it is difficult to

secure patient continuance in a settled plan of treatment where improvement is hardly perceptible to those who have the care of the children, and when we may fail to find a proper recognition of the necessity of great care in attention to the directions which we give them. Pecuniary considerations may also have an influence with parents which operate against us. Let us make all allowance for these difficulties, and not let them prevent us from the scientific study of the questions of interest connected with this subject.

It is not easy to answer the first question, why does the skin begin to ulcerate around the surface of an abscess? and why should the pathological changes assume such a chronic and unusual character?

If, as physicians, we refuse to treat these cases partly because we know how obstinate they are, and partly because there is little hope of holding the parents of a child to a long and tedious plan of treatment, extending over many months, while nothing so far as they see is being done; and for these reasons we leave the child to the surgeon, this I think is not quite wise and is rather selfish. I do not see that the dignity of the physician is sacrificed by his studying in a patient and scientific manner to resolve some of the obscure questions which lie at the root of this matter.

Is the disease primarily an infective process, and is the pus the agent of infection? Is the ulceration of the skin possibly due to some infective action of the pus which exudes from the abscess?

If we held this view it would be reasonable to trust chiefly to local remedies to arrest the ulceration. But I have said enough to indicate the bearing of pathology, and particularly the pathology of most recent date, upon a su h, from our familiarity with it, we may be incline hardly worthy of serious an thought said enough to prove that i nt of of children, are involved nost

difficult problems which relate to the subtle differences which exist between health and disease.

Let me now relate to you a case which illustrates the difficulties which are met with in treating this obstinate malady.

Some ten years ago two children, a boy and a girl, were among the out-patients here. Their appearance led me to doubt whether they could fairly claim the benefits of a charitable institution. The boy was about four years old and was suffering from otorrhœa ; the girl between six and seven, was the subject of ulcerating glands in the neck. Thinking that some adverse changes in the circumstances of the parents might possibly have compelled them to send the children to the hospital, no inquiries were made, and for two years the children were under treatment. Their constitutional tendencies were the same ; in the boy's case determining the form of ear discharge, in the girl's case influencing the glandular and cutaneous troubles in the neck. For two years improvement went on slowly but surely in both cases under simple treatment, local and constitutional, and the children came no more.

About two years after this I received a visit from a lady, who detailed in graphic language the troubles and anxieties she had suffered, particularly on account of the girl whose neck had been affected for two years before she came to the hospital. The wealth and position of this lady had given her the means of consulting various eminent physicians and surgeons. The children had lost their mother, and were left to her care as their aunt, and her anxious solicitude for them fully justified the confidence reposed in her. To assure me that she had done all she could think of for the girl before she had sent her to the hospital, she said that the late Sir Erasmus Wilson, as an intimate personal friend, had given the greatest care to the girl, but without success. A little less anxiety, a little less impatience, and some control over

the dread of disfigurement which threatened in this case, would have secured similar results to those which followed their treatment here. But private practice differs in this respect from practice at a hospital, that it is easier to obtain in the latter a steady and regular attention to details than in the former. Week after week we see cases for many months at a hospital in a way which is quite unknown in ordinary consulting practice.

The desire for rapid improvement, and the constant temptation to which wealthy persons are exposed to have what they think is the best advice, lead them to change their advisers too often for their own good; and thus they are not as well off as a poorer class of patients.

This lady confessed that it was with doubtful feelings she resorted to the expedient of sending her niece to this hospital, and when I heard all the details of the case I was surprised that the very brief and simple directions which were given were sufficient to encourage her to persevere. The young lady has now grown up, and the vestiges of the old malady are as little noticeable as could be expected.

The plan of treatment was simply as follows:—The glands being swollen and rather painful, and the amount of discharge from the abscess, which had last formed, being considerable, a fomentation was ordered twice a day, morning and evening, and then the skin was covered with dry precipitated sulphur, and protected by a layer of cotton wool, which was only removed for the fomentation. Fomentations thus used do not act in the same way as a linseed poultice, that is to say they do not promote suppuration, and are chiefly intended to keep the skin clean. The sulphur prevents the decomposition of the discharge, and probably thus protects the skin around the orifice of the abscess from its infecting influence. This at least is suggested by practical results. This was the plan of local treatment which was continued without change until the suppuration

ceased; that is for about six months. The chief purpose for which the wool covering was used, was chiefly to prevent the friction to which the neck is particularly exposed from the frequent movement of the head and the contact of the dress or collar. This latter cause alone is sometimes the origin of glandular swellings in the neck. Later a piece of lint was substituted for the wool, fixed by plaster so that it could not move over the surface and cause friction; and the sulphur application continued in the form of a thin ointment spread upon the lint. For constitutional remedies small doses of syrup of the iodide of iron and cod-liver oil were given; and occasionally some sulphur in rather large doses. The large doses of sulphur were given to produce a purgative effect, for we may notice that the results of tonic treatment are to a great extent regulated by the condition of the digestive organs, and that in lymphatic subjects, to use the language of past times, the secretions require attention.

Nothing more was done in the case I have been narrating, and there is nothing to be added to the history except that last year there were some signs of the glands being slightly inflamed, that was after an interval of continuous health for between five and six years. This appeared to be due to a general state of debility which attended a rapid growth in height and general development, which we frequently observe in young people between the ages of twelve and eighteen or later. The glandular growths have subsided under the same treatment as before. I could give you the histories of other cases similar to the above, in almost all respects the details of which resembled it in their slow and satisfactory progress. Many question of interest will occur to you in relation to this subject. There is a close resemblance between the disease of the skin which is associated with these glandular abscesses, and that particular form of ulceration which is termed "scrofulous" by some dermatologists; those cutaneous maladies which are included by

certain eminent French writers in the general term "Scrofulides." The way in which the ulceration begins around the orifice of an abscess and thence spreads in much the same way as the cutaneous affections referred to, certainly suggests similar constitutional conditions, and many perhaps would fairly decide from this that glandular abscesses are essentially scrofulous in their nature. There is, however, this fact to be observed that the skin, in many cases of abscess, recovers itself to a much greater extent than in those other cases, and the proof of the disease being tuberculous is thus decided. Let us leave this question for future consideration, and examine a case that illustrates the relation between hereditary syphilis and the conditions we are discussing.

This boy whose age is two and a half, has, as you see, a small abscess on the left cheek. He has had it from the age of nine months. It has closed and reopened frequently during that time. The skin is of blue colour, and slightly elevated over a round area of three-quarters of an inch diameter. There is no discharge at present and no pain. On the left hand there is an abscess which is apparently connected with the middle carpal bone, and you would probably decide without hesitation that this is scrofulous.

You will meet with cases like this where the history is distinctly syphilitic, that is, if you inquire closely into the history. You will probably decide that the disease is a form of scrofula if you judge by the symptoms alone. I do not say that the conditions are entirely due to syphilis and that scrofulous tendencies have no part in their production. These are the cases to which I referred at the beginning of this lecture, as likely to have induced the idea that syphilis and scrofula were in some way related. It is proper to admit that both diatheses may be present in the same child, and not to attribute the symptoms entirely to one cause to the exclusion of the other. In the course of the treatment of these cases you will soon realise the importance of these remarks.

LECTURE XVIII.

Treatment of Whooping-Cough by the Inhalation of Carbolic Acid.

Before concluding this course of Lectures I must perform a promise made some time since, that I would explain to you the method of treating whooping-cough by the inhalation of carbolic acid.

Some years ago I urged this subject upon the attention of the profession from the promise it held out, as far as experience enabled one to judge, of affording some means of relief for a very serious and distressing malady.

From time to time subjects of special interest have forced themselves upon our attention here, and thus the particular one we shall consider to-day has been put aside. And even now I should hesitate to occupy your time at any length on what might appear to be rather a matter of therapeutic interest of very limited importance, if there were not special reasons for thinking it deserving of careful attention.

One among others is that the plan of treating diseases of the pulmonary organs by the inhalation of carbolic acid has of late been properly regarded with much interest, and there are certain scientific principles, as well as certain details in the methods of its application which must be understood and carefully attended to, if we are to hope for reliable results, satisfactory or otherwise, in our adoption of it. Last year, a *resumé* of the various plans of treating whooping-cough

advocated at different times was drawn up at considerable length in the *Archiv für Kinderheilkunde*, by Dr. Cassel ("Zur therapie der Tussis Convulsiva, &c.," 1883, p. 373). When you understand the importance of attention to details you will readily perceive what a hopeless task it must be to reconcile the different results of different observers who have not attended to them. The chief value of Dr. Cassel's analysis is not, as he supposed, to supply us with practical information, but to show how very ignorant most of us are in respect to the simplest and most necessary details.

The first point which we must determine is this :—Under what conditions does phenol or carbolic acid assume the form of vapour? It must be quite clear to you that before we can expect any reliable results from the inhalation of a substance which, at the ordinary temperature, exists in the solid form, we must know precisely the conditions required to change it from the state of a solid to that of a vapour. For example, some have imagined that by mixing carbolic acid and water in a certain proportion, say three or four per cent., and sprinkling the floor of a room, or hanging up sheets moistened with the solution, the air would be charged with the acid. It is true that an odour of the acid would be perceptible, but as the acid does not evaporate under these conditions to any appreciable extent, you can understand how far any therapeutic effects could be expected from such a process.

How then are we to obtain a vapour of definite strength? That is the first point to be decided. Now carbolic acid lends itself in a very happy manner to the therapeutic experiment. Although it does not evaporate at the ordinary temperature of a room, it is found that when mixed with water and boiled the steam thus generated carries off with it a certain amount of acid, and this amount for all practical purposes is the same proportionately as the solution from which the steam comes off. For example, if we make a two per cent. solution of the acid in water and boil it, either in an open vessel, or under

pressure, in the way I shall show you presently, the steam thus generated contains two per cent. of acid, and thus we can obtain a vapour of definite and constant strength. It is quite clear that until we had determined the actual value of the vapour with which the experiments were being made, it was clearly hopeless to expect any kind of agreement in the results observed by ourselves or others. I find that this important point has been, and is still constantly overlooked and attention is paid to results without careful examination of the methods by which they have been obtained.

If you are interested in such experiments you will find a fuller account than I need detain you with, in the pages of the *Medical Press and Circular*, June 11th, 1884. They were conducted by Dr. Piesse and Mr. Johnston, and their value, I have no doubt, will be gradually appreciated.

We may assume, then, that we can diffuse in the atmosphere definite quantities of carbolic acid by boiling it with water, and the vapour may be inhaled either directly as it comes off from the heated solution, or by breathing the air of the room.

If you calculate the quantity of carbolic acid which would be required to be diffused in a room of fifteen feet square and ten feet in height, in order that the air may contain something under one per cent. of acid in the form of vapour, you will find that it would require at least 10 oz. of the acid.* So that the attempt to carbolise the air of a room would not be so convenient or effective as the inhalation of the vapour given off directly from the heated solution.

The most simple plan therefore of giving inhalations of carbolic acid is to prepare a mixture of about one drachm of the pure acid to a pint of water, and by boiling this in a convenient vessel the vapour can be easily inhaled.

* 1 cubic inch water = $\begin{cases} 252{\cdot}46 \text{ gr.} \\ 1700{\cdot} \text{ cub. inches steam.} \end{cases}$
1 cubic foot = 1754 cubic inches.

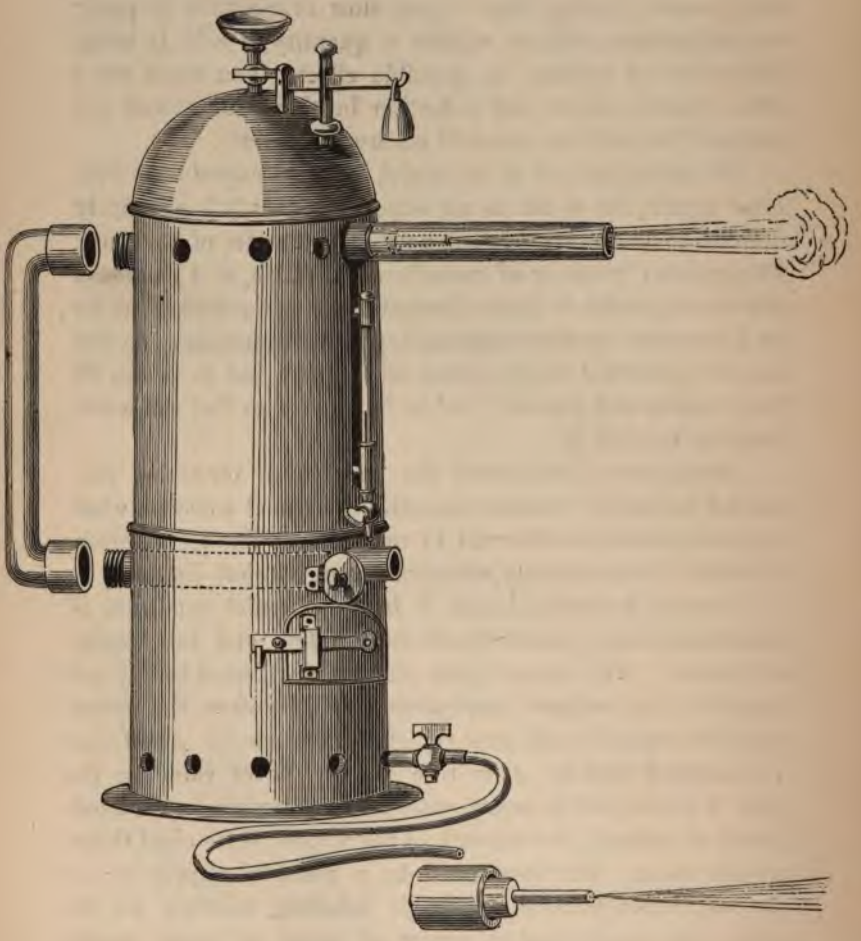
Possibly you may find this strength of vapour too much for a young child, and further dilution will be required. It is of very little practical use, as you can easily understand, to keep a vessel boiling from which slow evaporation is going on, and perhaps only so minute a quantity of acid is being diffused as to produce no possible effect. You must use a little common sense and reflection in this matter, and not commit the mistakes you will otherwise fall into.

Let me advise you to be careful how you experiment with other agents, for as far as my experience goes it is extremely difficult to avoid errors in the very preliminaries of their use. The peculiar property of carbolic acid, which, as I have said aids us so greatly in these observations is not possessed as far as I am aware by other medicinal agents. For instance, thymol can be volatilised when heated with water, but it passes off very rapidly and you will find in a short time that the water contains none of it.

Having now determined the method of obtaining carbolised vapour of definite strength, let us next consider what conditions must be observed to make it possible for a person to inhale it conveniently, effectively, and without distress.

You can understand that it is an essential condition of inhalation that a patient should have a free and full supply of pure air. The vapour given off by water I need hardly tell you, will not support respiration, and therefore the steam must be regarded only as a vehicle for the special agent that is combined with it. It is true it may be of value for the heat it yields, and in many cases as, for example, in the treatment of quinsey, the warmth of the vapour is its chief therapeutic value. But there must be a plentiful supply of air for respiration while a patient is inhaling, whether we are using the simple heated vapour of water, or some special therapeutic agent in combination with it.

Now steam as it issues from a kettle is at too high a temperature to be inhaled directly, and accidents may occur



especially to children, if they are brought too near the mouth of a kettle. When a vessel containing water is placed over a spirit lamp, and the temperature of the vapour is reduced by more rapid diffusion than in the case of a kettle, there is, of course, less risks of accidents, and I should advise you to adopt the latter plan for this reason.

I have taken advantage of a principle which affords us the most convenient and perfect means of treatment by inhalation, and which I will briefly explain to you.

When a jet of steam issues from an orifice of known dimensions, and is directed along a tube also of definite dimensions a current of air is obtained by the propulsive force of the steam jet, which current may be regulated both in amount and in temperature by varying the force of the jet and the amount of air admitted into the tube. In the machine before you, you see how this principle may be applied in practice.

This machine is of large size, and will continue to supply a current of warm vapour for eight or nine hours, and the current will be constant in amount and in temperature if the heating power is not altered. By using a solution of carbolic acid and water in the proportion of one of the former to 80 or 100 of the latter, we obtain a carbolised vapour of constant and definite character, and with this we can judge of the value of the method of treating whooping-cough or any other malady with carbolic acid vapour.

The principle here adopted may be applied on a much smaller scale as in this little inhaler which has found increasing favour with the profession, as the scientific principle on which it is constructed has been better understood. You may possibly imagine that the consideration of this subject is hardly one deserving of attention, and that it is a matter of very little importance how inhalation is managed. It is, however, by strict attention to details of this kind that we can reasonably expect any satisfactory results, and I suspect

that those who pretend to overlook them are really trying to find some excuse for the want of mental energy and knowledge that are required to understand them.

Let me now show you the machine at work. The jet of

steam you perceive is of small size, and the tube can be fixed to the boiler so that the jet plays along its central axis. A current of air is induced by the action of the jet, the air passing in from behind the jet to supply the place of that which is propelled in front of it. While the force of the jet remains the same, and there is no obstruction to the admission of air behind it, the current which issues from the tube is constant both in volume and temperature.

If I hold a thermometer in front of the tube you see the mercury registers 116 deg. Fahr. We can easily admit more

air by exposing these openings made in the tube close behind the jet. Since the large machine was made I have altered the original relation of parts and adopted the arrangement shown in the small inhaler. By this plan you clearly see that we overcome the first necessity of inhalation, namely, the supply of atmospheric air. By closing the openings slightly we admit less air and thus raise the temperature of the vapour. It is true that the force of the current is also diminished, but it is still more than sufficient for all the purposes for which we use it. In the treatment of whooping-cough there is no advantage in having the vapour above 116 deg., for the temperature of the vapour is not of so much importance as the particular quality it possesses when carbolic acid is combined with it.

The question of scientific interest in the construction of a perfect inhaler is connected with the properties of a jet of steam, and with the size of the jet in relation to the tube in which it acts. In the small Inhaler where the tube is $\frac{3}{4}$ in. diam., the arrangement with a spirit lamp provides a current of air moving at about 1,000 feet per minute. By increasing the pressure we can increase this velocity very greatly. Let me say, however, that you can make a fairly efficient inhaler out of a common kettle, one which will prove useful in the treatment of whooping-cough, particularly in the houses of the poor. If a tin tube, two or three feet in length and an inch or so in diameter, that is five or six times the diameter of the spout is fixed round it, leaving space for the air to enter freely, you will find that a current of air will be induced, and that vapour will issue from the tube with some velocity and at such a temperature that a child can breath it without danger or difficulty. I hope that you will understand my reason for giving you these homely details, a knowledge of which may prove useful for those who have the greatest claim on our sympathy and attention.

At the same time you must not imagine that the construction of a perfect machine has not required much thought

and care. If you do not understand the scientific principle on which a jet of steam acts in producing a current of air you might waste time in attempting improvements in what I have shown you. An ingenious young man who was house surgeon at this hospital some years ago indulged in this idea, and brought the results of his experiments before the Medico-Chirurgical Society.

I refrained from exposing his ignorance and pretensions to originality, and trusted that time would correct the former and moderate the latter. But I was at last compelled to take a different course, for frequent advertisement of this machine, claiming originality and using the name of the Royal Medico-Chirurgical Society as its guarantee forced me in the interests of the Society and of the profession to interfere.

If any of you would like to go further into this matter and feel some interest in it, we can discuss it at some future time. I have said enough now to show you that we are aware of the necessity of being careful and accurate in the therapeutic experiments we have made in regard to the use of inhalation.

With confidence I can assure you, speaking from several years experience that you can relieve whooping-cough by this method, but I will not go as far as some of my friends and assert that carbolic acid cures the malady.

To say this would be to go beyond the truth. All we can fairly claim for the method is, that it is better than others, particularly in respect to the relief it affords to the local symptoms to which I referred when we discussed the subject of whooping-cough.

L CTURE XIX.

Urinary Troubles.—Concluding Remarks.

Among the many nervous derangements common in infancy and childhood, and the pathology of which is still very obscure, you must have observed that incontinence of urine is a frequent one. To-day I propose to make some general remarks on this subject, and upon one or two others which have been suggested by the cases we have seen this morning. I have been anxious in this short course of lectures to direct you how to observe and study disease, as experience has taught me this should and can be done by making Nature our chief teacher, and by personal observation learning from Nature more than books can teach. When a child is brought to you suffering from incontinence of urine, inquire at once whether it is only at night and during sleep that the trouble occurs, or if the child be uncomfortable all day from want of power to control the flow of urine. Since Trousseau's lecture on this subject was published the plan of treatment he advised has been very general. The use of belladonna at first in small doses ($\frac{1}{4}$-grain extract), then increased gradually till as much as two grains of the extract are administered daily, has certainly been justified by clinical results. But if you refer to that lecture, and it is one so instructive and suggestive that it is well deserving of perusal you will find that Trousseau distinguished between cases of nocturnal incontinence and the less common cases of want of control during the day,

that is, when the child is awake. In sleep, and especially in heavy sleep, we can easily conceive it possible for the bladder to relieve itself without waking the child. But when a child is much in the condition of an old man with paralysis of the bladder it must clearly occur to the mind to question whether the term incontinence of urine can fairly be applied to the two cases; or at least whether the causes must not differ, and, consequently, the mode of treatment in these two forms of incontinence. When you have to deal with nocturnal incontinence you may confidently expect good results from the use of belladonna. When it is the other form, speaking from a large experience, I should advise you to be less hopeful. Indeed, in some cases of this kind, belladonna often fails to be of any value. Trousseau suggests a reason for this, arguing that in nocturnal incontinence there is unnatural irritability of the bladder, but sufficient tonicity of the sphincters to oppose it, except in sleep, when the sphincters relax and the urine escapes. In those cases, however, where the incontinence persists during the day as well as the night, he assumed a partial paralysis of the sphincters, and this condition he treated with strychnine. You have seen a case this morning of the latter kind in a boy five years old, and you observed that he had already been circumcised as an infant. I have seen many cases like this, and have been led to doubt whether the operation of circumcision is of any value as a cure for incontinence. We have, therefore, to consider carefully in every case the conditions of the bladder and of the sphincters respectively; and as they are often both deranged more or less we must adapt our treatment accordingly. So far as we can see at present, this is the general principle on which this class of cases is to be treated.

Trousseau tried the effect of pressing the prostate in certain cases, but his experience was insufficient to give any satisfactory result. I have tried in a few cases the injection

of a weak solution of nitric acid into the urethra to produce irritation and increased sensitiveness with occasional good result. In some cases it has been very successful, in others not at all so.

It is important to regulate the digestive organs in all cases of incontinence, for we frequently find that the subjects of it are troubled with ascarides, or some intestinal irritation. At the same time the urinary secretions are often unhealthy, and the irritable condition of the bladder is thus increased. It is important to combine therefore with the special use of belladonna proper attention to this point in the treatment. Further, we know with what hereditary tendencies to neurotic derangements incontinence is associated, and that it is common in choreic children. The improvement of the general health by tonics will therefore suggest itself to you as a necessary part of the treatment. These remarks have been illustrated by the three cases we have seen this morning. In one, a girl of six years of age, there were distinct symptoms of chorea, an anæmic, ill-nourished, nervous child; suffering also from ecthyma, a symptom of low constitutional health. The second case, also a girl, resembled the last very closely, though she showed no signs of chorea. She was also suffering from ecthyma, and her mother mentioned particularly the fact that the urine she passed had a strongly disagreeable odour.

The third case was that of the boy, which I have already remarked on, and which will prove the most obstinate, for the reason that the incontinence persists during the day, and is not limited in its occurrence to the hours of sleep. Associated with this particular kind of neurosis is another not uncommon one, the night terrors of children, and somnambulism, which should be treated by the same constitutional remedies, and by doses of bromide of potassium and belladonna. I need hardly say that careful, moral treat-

ment, must be insisted upon, and that no encouragement whatever should be given to the forms of correction which thoughtless parents inflict on these feeble children.

I have only one remark more to make in respect to these nervous maladies, namely, that they diminish with age, and the symptoms usually disappear before or about the time of puberty.

There was one case to which I directed your attention on account of its peculiarity. It was the infant with an unusual conformation of the head. Your opinion will be asked some day upon a case of this kind, for the condition is so striking that it cannot but be noticed by, and cause anxiety to, the mother.

The infant was nine months old, fairly well-nourished and seemingly cheerful and free from pain.

Its forehead was unusually large, and the occipital part of the cranium unusually small. The measurement of the former, from just above the auditory meatus, was ten inches, of the latter, from the same points, seven and a quarter inches. The whole circumference of the head was nearly eighteen inches, that is, an average size. The only symptom which we noticed as peculiar was left lateral nystagmus. I think that I have more than once asked you to observe that a common form of nystagmus is a lateral movement of the eyes in one direction slow and regular, succeeded by a quick return of the eyeballs by a succession of two or three jerks to the axis of direct vision. The first movement in this infant was from right to left. The association of this symptom with unilateral central derangement, usually ventricular effusion, is more than probable, as I shall on some future occasion give you evidence of.

The commonest form of cranial malformation is unilateral flatness, extending over one side of the skull, with corresponding prominence of the opposite side.

We also meet with cases of flatness of both sides of the

cranium, as though the head had been pressed by boards, as is practised by certain half-civilised tribes.

The length of the head is, of course, greatly increased in these cases. The singular point to be noticed in regard to this peculiarity, as well as in all forms of cranial deformity, is that frequently very little, if any, serious trouble arises from it, provided that the capacity of the skull is not much affected, and the cranial cavity not diminished, so as to arrest the development of the brain. In some further lecture I propose to collect notes of cases of this kind for your consideration. The common cause of the deformity is some maternal disturbance during pregnancy, the cause so frequently assigned for other kinds of deformity; but sometimes it is clearly due to the use of the forceps, and sometimes to unusual pressure of the head during labour.

In looking back over the different subjects which we have considered and studied together, I am sensible of the fact that we have treated them in a very broad and general manner. Details have been sacrificed to the object of determining general principles, and we have been more concerned with the outlines of the features presented by large groups of cases rather than with the finer shades which make the picture complete. I have left you to fill in these purposed deficiencies from your own observation, as time and experience will doubtless afford you opportunities of doing.

In the out-patient practice of such a hospital as this, it is true we have a rich field of observation. At the same time there is a vast amount of perfectly useless material, or rather I should say material worse than useless, as it has to be separated and put aside. This involves great waste of time and energy, and impedes those who are seriously inclined to the study of true disease. I should not like to say how many of the cases that have passed under our notice have been not cases of disease in a true sense, but simply the result of malnutrition, and the ill-surroundings of the offspring of the

poor of a great city. Let me impress upon you the fact that in private practice you have the best opportunities of studying the diseases of infancy and childhood, and be assured that you will learn more by your own independent observation and reflection than by any amount of reading. There are many diseases which spring from causes beyond our comprehension. For example, we hope some day to see the cause of whooping-cough, to know the true pathology of chorea, or rickets, or to understand completely the numerous disturbances of the system arising from the effects of changes of atmospheric temperature on the system. But the clinical phenomena will remain the same; as they have been, so they will be for all time. These clinical phenomena should be made the subjects of your closest observation, and must never be allowed to yield in importance to any others which may claim to be superior to them.

In the course of these lectures I had in view the conditions under which most of you will be placed in the ordinary practice of your profession, and if some of you still doubt the value of the work we have done together, I am certain that the time will come when you will understand its importance.

THE END.

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